Sterling Environmental Engineering, P.C.

SEWER CONSTRUCTION ENVIRONMENTAL WORK PLAN

FORMER OAK MATERIALS FLUORGLAS DIVISION SUPERFUND SITE HOOSICK FALLS, NEW YORK

Prepared for:

Village of Hoosick Falls
24 Main Street
Hoosick Falls, New York 12090

Prepared by:

Sterling Environmental Engineering, P.C.
24 Wade Road
Latham, New York 12110

May 30, 2019

"Serving our clients and the environment since 1993"

SEWER CONSTRUCTION ENVIRONMENTAL WORK PLAN

FORMER OAK MATERIALS FLUORGLAS DIVISION
SUPERFUND SITE
HOOSICK FALLS, NEW YORK

TABLE OF CONTENTS

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1.0 INTRODUCTION

On behalf of the Village of Hoosick Falls (the "Village"), Sterling Environmental Engineering, P.C. (STERLING) provides this Environmental Work Plan to support the sanitary sewer improvement project adjacent to the Inactive Hazardous Waste Site ID 442049 known as the former Oak Materials Fluorglas Division Superfund Site (the "site") located at John Street/3 Lyman Street and River Road. Investigations at the site have identified contamination of the groundwater and soils with chlorinated solvents and Per/Polyfluoroalkyl Substances (PFAS). Specifically, the identified contaminants of concern (COC) are: trichloroethene (TCE); 1,1,1-trichloroethane (TCA); and perfluorooctanoic acid (PFOA). Contamination has migrated to the north-northeast of the Site extending to the Hoosic River as evidenced by subsurface soil and groundwater testing.

Select site investigation figures are provided in Appendix A. The offsite monitoring well clusters MW-25, MW-26, and MW-31 indicate groundwater contamination at varying depths. Wells MW-25A, MW-26A and MW-31A are screened in the uppermost water bearing zone at each well cluster, which is the groundwater most likely to be encountered during sanitary sewer construction.

Sewer work is proposed on John Street, Superior Street, Lyman Street, and Water Street in areas where groundwater and soil contamination has been confirmed. A wastewater pump station is also proposed for the west side of Lyman Street.

This Environmental Work Plan provides field criteria to determine if and when potentially impacted media requires management. The Work Plan also sets forth the steps required to:

- Characterize and manage impacted soil and groundwater.
- Provide community air monitoring.
- Identify health and safety requirements.

2.0 SEWER CONSTRUCTION PROJECT

Sanitary sewer construction work is subject to Contract #1 – Sanitary Sewer Installation under plans and specifications developed by the Village's consultant MRB Group (MRB Project No. 0825.15005.000). This contract has been awarded to Peter Luizzi & Bros. Contracting Inc. (Luizzi).

The wastewater pump station construction work proposed at Lyman Street is pursuant to Contract #2 – Lyman Street and River Road Sanitary Pump Stations under plans and specifications developed by MRB Group (MRB Project No. 0825.15005.000). This contract has been awarded to J. Squared Construction Corp.

Excerpts from the Sewer Construction Plans and Specifications are provided in Appendix B.

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2.1 Project Contacts

Key project contacts, affiliations, and roles are provided in Table 1.

Table 1

Name	Affiliation/Role	Telephone	Email
Robert Allen	Mayor / Project Owner	(518) 686-7072	mayor@hfvillage.org
Richard DeGuida	MRB Group / Project Engineer	(315) 744-0326	RDeGuida@mrbgroup.com
Joe Miskewicz, Jr.	Luizzi Brothers / Contract 1 Prime Contractor	(518) 641-8341	jmisk@luizzibros.com
Mark Millspaugh	Sterling / Advisor	(518) 456-4900	mark.millspaugh@sterlingenvironmental.com
Susan Edwards	Chief / NYSDEC	(518) 402-9676	susan.edwards@dec.ny.gov
Ian Beilby	NYSDEC	(518) 402-9676	Ian.Beilby@dec.ny.gov
Barbara Firebaugh	NYSDEC / John Street Site Manager	(518) 402-9676	barbara.firebaugh@dec.ny.gov
Karen Rusin	NYSEFC	(518) 402-6924	Karen.Rusin@efc.ny.gov

Sewer installations proposed on John Street, Superior Street, Lyman Street, and Water Street within areas of known or suspected contamination downgradient (north-northeast) of the Superfund site will require field determinations by a qualified environmental professional (QEP) with respect to the handling and management of potentially contaminated construction soils and water resulting from excavation and dewatering associated with the sewer project.

The contaminant plume downgradient (north-northeast) of the John Street site has not been fully characterized and delineated. The plume is generally described as migrating north-northeast of the onsite source area. Groundwater contamination has been verified at the three offsite groundwater monitoring well clusters installed as part of the Superfund site investigation.

Figures in Appendix A identify the Superfund site, groundwater elevations, geologic stratigraphy, and representative levels of detected groundwater contamination. The area of concern (AOC) extends from the John Street site north to the Hoosic River and from Lyman Street east to Church Street. Sewer construction work within this AOC will be subject to this Work Plan.

3.0 CAMP

The Community Air Monitoring Plan (CAMP) developed for the John Street site (ERM, July 2016) will be implemented for the site whenever ground intrusive activities take place within the AOC. A copy of the CAMP is provided in Appendix C. The CAMP is intended to provide a measure of protection for the downwind community (i.e., general public outside the Exclusion Zone) from potential airborne contaminant releases as a direct result of ground-intrusive activities. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Response levels and actions will be described

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for specified concentrations of VOCs and particulates detected in the ambient air at least 20 feet downwind of the Exclusion Zone.

4.0 FIELD MONITORING AND DECISION CRITERIA

As the sewer work progresses within the AOC, the excavation will be observed by the QEP for the presence of groundwater or soils that may have been in contact with a seasonal high groundwater table. Shallow excavation spoils that are dry and do not exhibit evidence of being in contact with groundwater will be managed by the Contractor according to the sewer project specifications. Deep excavation spoils will be screened by the QEP with a photoionization detector (PID) equipped with an 11.7 eV lamp for the presence of volatile organic compounds (VOC) due to likely contamination by chlorinated VOCs identified in groundwater. Whenever groundwater is observed entering the trench, the provision of this Work Plan must be followed.

Prior to work proceeding under this Work Plan, the following measures must be in place:

- CAMP air monitoring stations must be set up and operating.
- Adequate supply of lined containers must be available to manage soil in accordance with Section 5.0 of this Work Plan.
- Adequate supply of frac tanks and treatment equipment must be available to manage all removed groundwater in accordance with Section 6.0 of this Work Plan.
- The Contractor must provide a written Health and Safety Plan (HASP) that describes the Contractor's work zone monitoring and procedures performing work around hazardous substances. STERLING's HASP is provided in Appendix D for the Contractor's reference.
- Equipment and tools in contact with potentially contaminated soil or groundwater will require decontamination prior to moving to locations outside the AOC where soil and groundwater contamination has been confirmed to be absent.

5.0 SOIL MANAGEMENT

Shallow excavation spoils that are dry and do not exhibit evidence of being in contact with groundwater will be managed by the Contractor according to the sewer project specifications. Soil that is saturated or that exhibits evidence of having been in contact with the seasonal high water table will be presumed as potentially contaminated and must be segregated and contained for management. The QEP will screen potentially contaminated soil with a PID to facilitate segregating based on degree of potential contamination.

5.1 Headspace Screening

Excavated soil will be screened with a PID equipped with an 11.7 eV lamp based on the site COCs. Soil will be screened from the excavator bucket. The QEP will not enter trench excavations to screen soil. Screening will be performed by making an indentation in the soil immediately after excavation and inserting the PID probe into the void space. The maximum PID response obtained within 5 seconds will be recorded. Soil will be managed into separate containers based the degree of potential contamination using a screening level of 10 ppm. Excavated soil with PID readings less than 10 ppm will have a greater likelihood of achieving onsite reuse criteria based on analytical testing and will be segregated from soil exhibiting greater levels of contamination requiring offsite disposal. PID screening is solely for determining material handling procedures prior to collection of samples for laboratory analysis. Onsite reuse or offsite disposal of excavated soil will be determined following receipt of analytical results.

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5.2 Segregation and Handling

Excavated soil that is saturated or has been in contact with groundwater must be managed using one of the following methods:

- Place excavated soil directly into lined roll-off containers for characterization and reuse or disposal if required. Excavated soil with PID screening less than 10 ppm will be placed in containers separate from excavated soil with PID screening exceeding 10 ppm. A sufficient number of containers must be available onsite each working day prior to initiating excavation into potentially contaminated soil.
- Place pre-characterized excavated soil directly into disposal trucks for transport to a permitted disposal facility.

5.3 Characterization, Transportation, and Disposal

Segregated potentially impacted soil will be characterized for reuse or disposal. Onsite reuse requires testing for chlorinated VOCs for comparison to protection of groundwater standards and PFAS for comparison to the laboratory Reporting Limit. Soil meeting VOC protection of groundwater standards and non-detect for PFAS can be used onsite as backfill if the material meets the project specifications. Characterization for offsite disposal will include parameters required by the Contractor's selected disposal facility. Disposal characterization sampling will be specific to the receiving disposal facility and is anticipated to include the following:

- PFAS
- TCLP VOCs
- TCLP SVOCs
- TCLP Pesticides
- Corrosivity
- Ignitability

Sampling and testing must be performed in accordance with the Quality Assurance Project Plan (QAPP) in Appendix E. All excavated soil transported for disposal must be by 6 NYCRR Part 364 permitted haulers accompanied by an NYSDEC Waste Tracking Form (see Appendix F). If characterization sampling determines soil to be hazardous waste, the site will file for a United States Environmental Protection Agency (USEPA) identification number as a hazardous waste generator. Hazardous waste must be transported by Part 364 permitted haulers that have a USEPA ID number.

6.0 DEWATERING AND WATER MANAGEMENT

Any groundwater removed from trenches and excavations within the AOC must be managed according to the following procedures:

- Water will be pumped to one or more 20,000 gallon portable frac tanks.
- Water will be pumped through a weir tank and/or bag filter for particulate removal and then to a trailer-mounted treatment system consisting of two granular activated carbon (GAC) filters in series.
- Characterized and treated water will be discharged to the Village sanitary sewer system or storm sewer system in accordance with the NYSDEC-authorized SPDES equivalence issued to the Division of Environmental Remediation by the NYSDEC Division of Water (Appendix G).

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- 20,000 gallon batches of treated water (i.e., one frac tank) will be held for analytical testing prior to discharge. Monitoring parameters and discharge limits are listed in the SPDES Equivalence in Appendix G. Following receipt of acceptable test results, the treated batch of water can be discharged.
- Contaminant breakthrough monitoring will be performed by collecting one sample per 20,000 gallons of treated water from the midpoint between the two GAC filters. The sample will be tested for TCE, PCE, PFOA, and PFOS. If the midpoint sample exceeds the discharge limits in the SPDES Equivalence in Appendix G, the first GAC filter will be removed, the second filter will become the first, and a new second filter will be installed.

7.0 RECORDKEEPING

STERLING will complete daily field reports summarizing monitoring activities. Quantities of soil and water requiring management will be estimated based on the handling container size (e.g., disposal trucks and frac tanks). Soil disposal of non-hazardous waste will be tracked using the NYSDEC tracking form in Appendix F. Soil disposal of hazardous waste will be tracked on USEPA hazardous waste manifests obtained from authorized printers. All soil disposal quantities will be totaled based on scale weights at the disposal facility.

8.0 HEALTH AND SAFETY

Construction activities at an uncontrolled hazardous waste site require compliance with Occupational Safety and Health Standard 29 CFR 1910.120 for hazardous materials referred to as HAZWOPER. Compliance with HAZWOPER regulations requires an employer to implement a Safety and Health Program that includes, but is not limited to worker training, worker health monitoring, recordkeeping, and use of Personal Protective Equipment (PPE). HAZWOPER requirements are in addition to general Safety and Health Regulations for Construction contained in 29 CFR 1926. All equipment operators/laborers and supervisors entering the active work zone within the AOC must have required HAZWOPER and construction credentials. The Contractor must provide a site-specific HASP that complies with HAZWOPER regulations and includes work zone air monitoring and action levels for worker respirator use.

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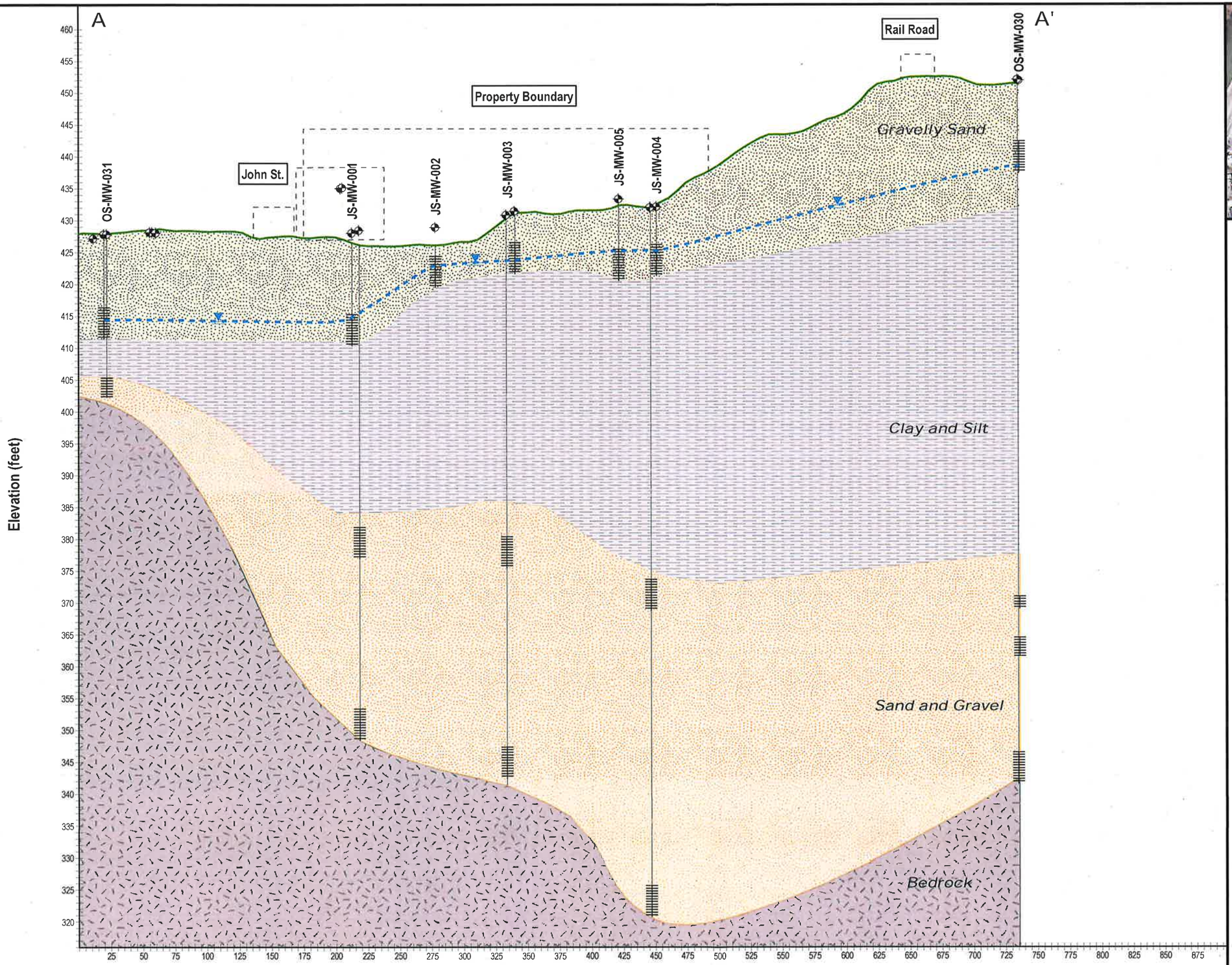
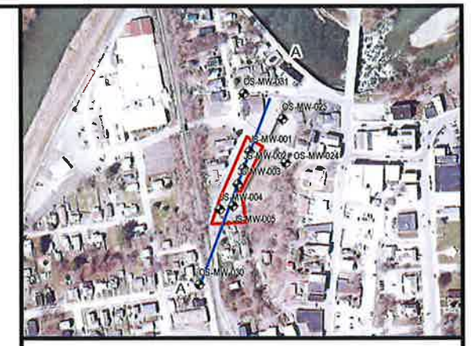
APPENDIX A

FIGURES FROM SITE INVESTIGATION REPORTS





Legend

- Monitoring Wells
- Ground Surface
- Monitoring Well Screen
- Groundwater Elevation
- Approximate Water Table

Predominant Geology Type

- Gravelly Sand
- Clay and Silt
- Sand and Gravel
- Bedrock

NOTES:

- Fill material or debris locally present near surface
- Vertical Exaggeration = 5X

Figure 10: Geologic Cross Section A-A'
Former Oak Materials Fluorglas Division
John Street Property
Village of Hoosick Falls
Town of Hoosick
New York

ERM

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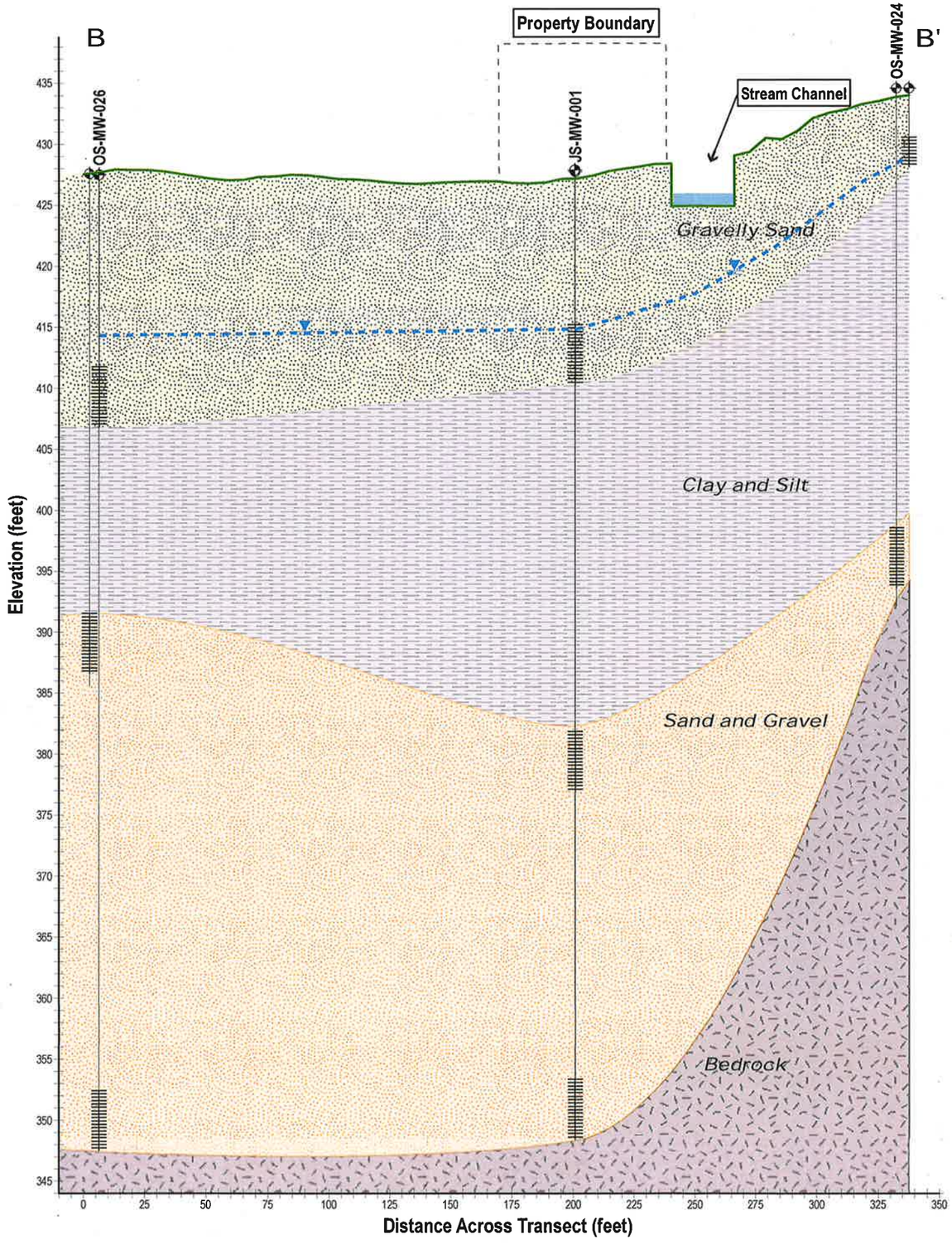

Legend

- Monitoring Wells
- Ground Surface
- Monitoring Well Screen
- Groundwater Elevation
- Approximate Water Table

Predominant Geology Type

- Gravelly Sand
- Clay and Silt
- Sand and Gravel
- Bedrock
- Surface Water

NOTES:

- Fill material or debris locally present near surface
- Vertical Exaggeration = 5X

Figure 11: Geologic Cross Section B-B'
Former Oak Materials Fluorglas Division
John Street Property
Village of Hoosick Falls
Town of Hoosick
New York

ERM

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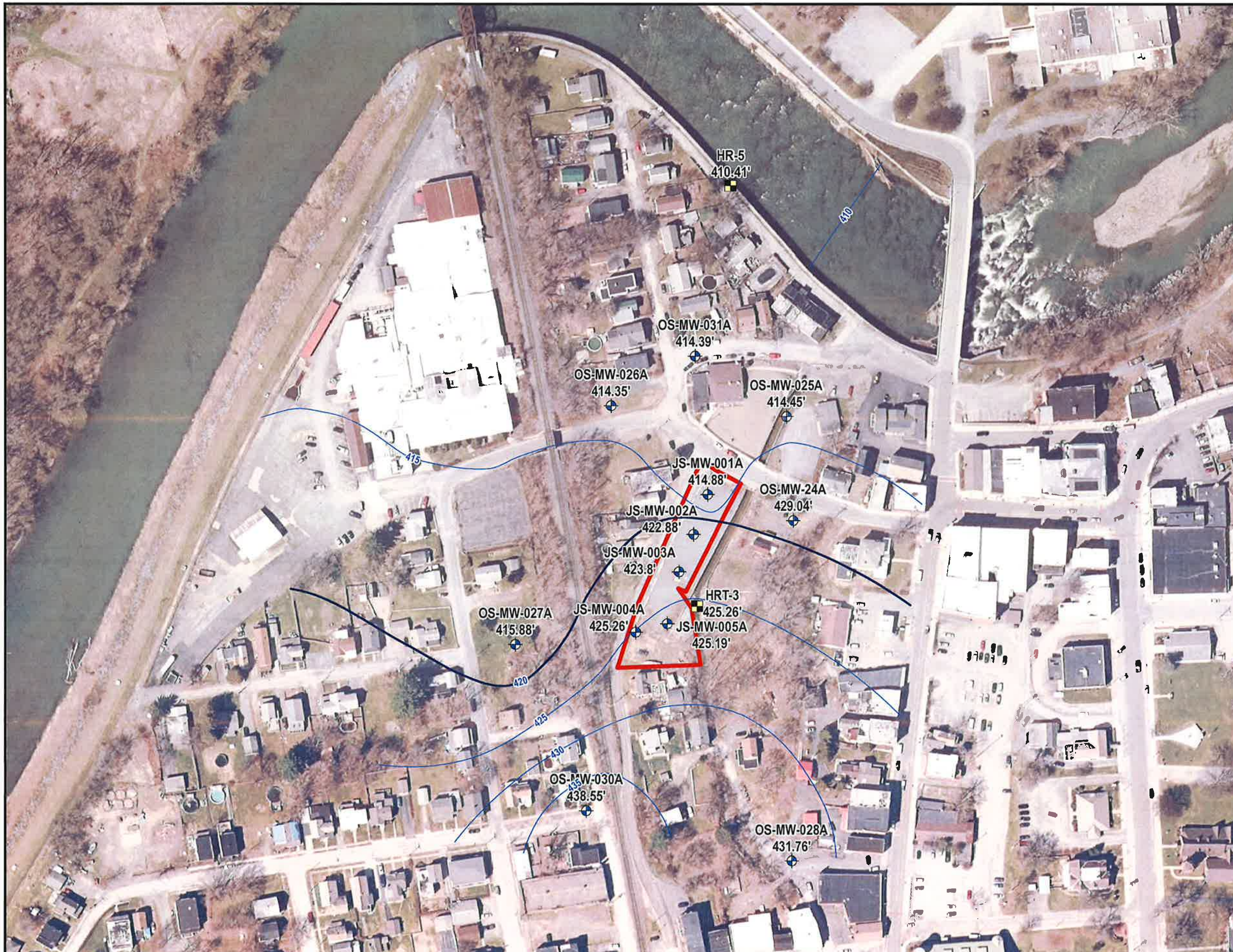


Legend

- Groundwater Elevation (A Wells)
- Stream Gauge Water Elevation
- Groundwater Elevation Contour (20 ft Intervals)
- Groundwater Elevation Contour (5 ft Intervals)
- Approximate Property Boundary

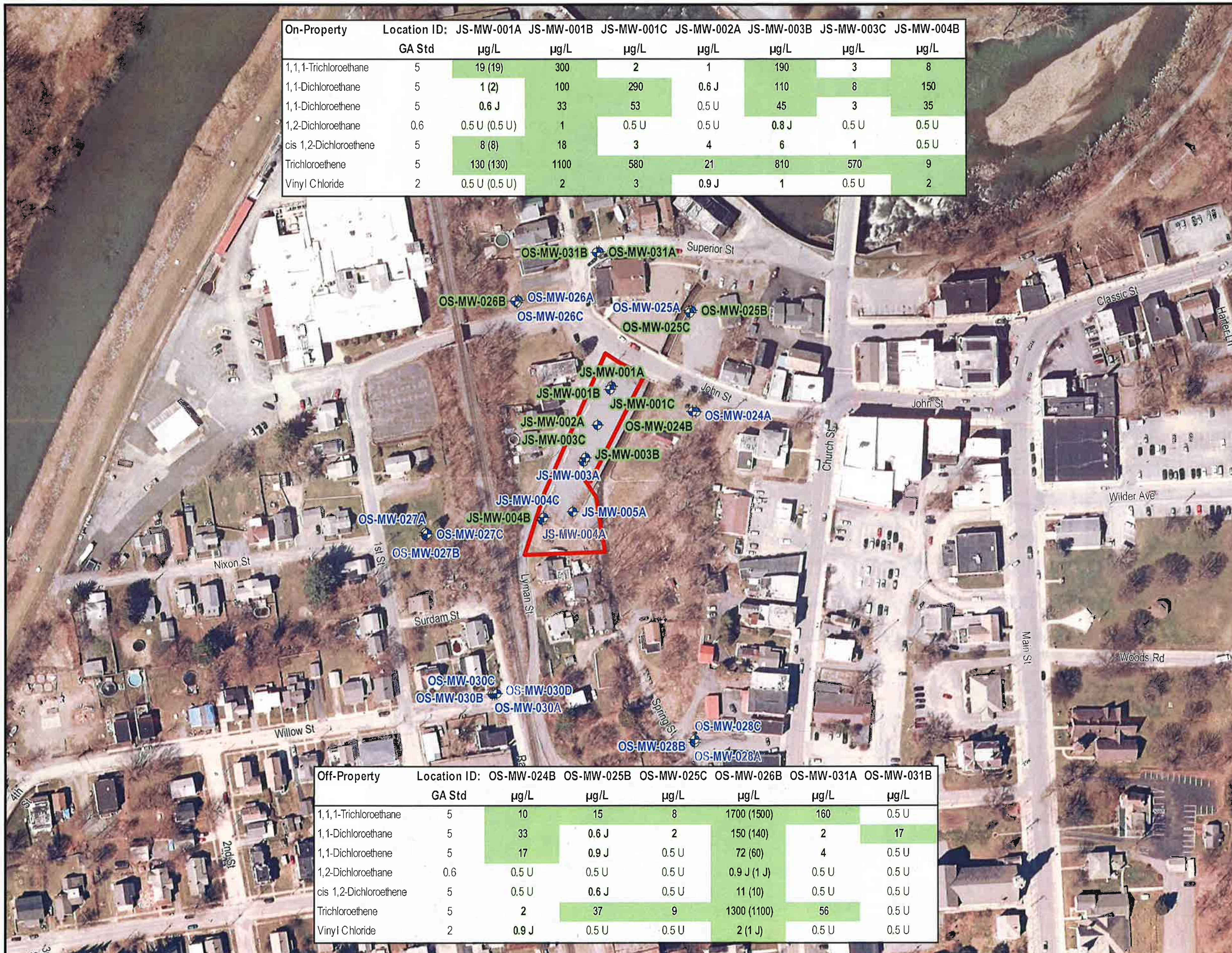
NOTE:
- Groundwater elevation measured on 1/4/2017 and labeled as feet above mean sea level.

N

0 25 50 100 150 200
Feet

Figure 12: Shallow Overburden Potentiometric Surface
Former Oak Materials Fluorglas Division
John Street Property
Village of Hoosick Falls
Town of Hoosick
New York

ERM



On-Property	Location ID: GA Std	JS-MW-001A µg/L	JS-MW-001B µg/L	JS-MW-001C µg/L	JS-MW-002A µg/L	JS-MW-003B µg/L	JS-MW-003C µg/L	JS-MW-004B µg/L
1,1,1-Trichloroethane	5	19 (19)	300	2	1	190	3	8
1,1-Dichloroethane	5	1 (2)	100	290	0.6 J	110	8	150
1,1-Dichloroethene	5	0.6 J	33	53	0.5 U	45	3	35
1,2-Dichloroethane	0.6	0.5 U (0.5 U)	1	0.5 U	0.5 U	0.8 J	0.5 U	0.5 U
cis 1,2-Dichloroethene	5	8 (8)	18	3	4	6	1	0.5 U
Trichloroethene	5	130 (130)	1100	580	21	810	570	9
Vinyl Chloride	2	0.5 U (0.5 U)	2	3	0.9 J	1	0.5 U	2

Off-Property	Location ID: GA Std	OS-MW-024B µg/L	OS-MW-025B µg/L	OS-MW-025C µg/L	OS-MW-026B µg/L	OS-MW-031A µg/L	OS-MW-031B µg/L
1,1,1-Trichloroethane	5	10	15	8	1700 (1500)	160	0.5 U
1,1-Dichloroethane	5	33	0.6 J	2	150 (140)	2	17
1,1-Dichloroethene	5	17	0.9 J	0.5 U	72 (60)	4	0.5 U
1,2-Dichloroethane	0.6	0.5 U	0.5 U	0.5 U	0.9 J (1 J)	0.5 U	0.5 U
cis 1,2-Dichloroethene	5	0.5 U	0.6 J	0.5 U	11 (10)	0.5 U	0.5 U
Trichloroethene	5	2	37	9	1300 (1100)	56	0.5 U
Vinyl Chloride	2	0.9 J	0.5 U	0.5 U	2 (1 J)	0.5 U	0.5 U

Legend

- Exceeds NYS GA Standard
- Monitoring Well Location
- Approximate Property Boundary

NOTES:

VOCs - Volatile Organic Compounds
Concentrations in units of micrograms per liter (µg/L)
U - Compound not detected over detection limit
J - Approximate value
Values in parentheses are the results from field duplicates
Aerial Imagery captured in 2014 from New York State

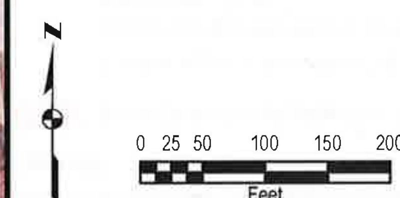
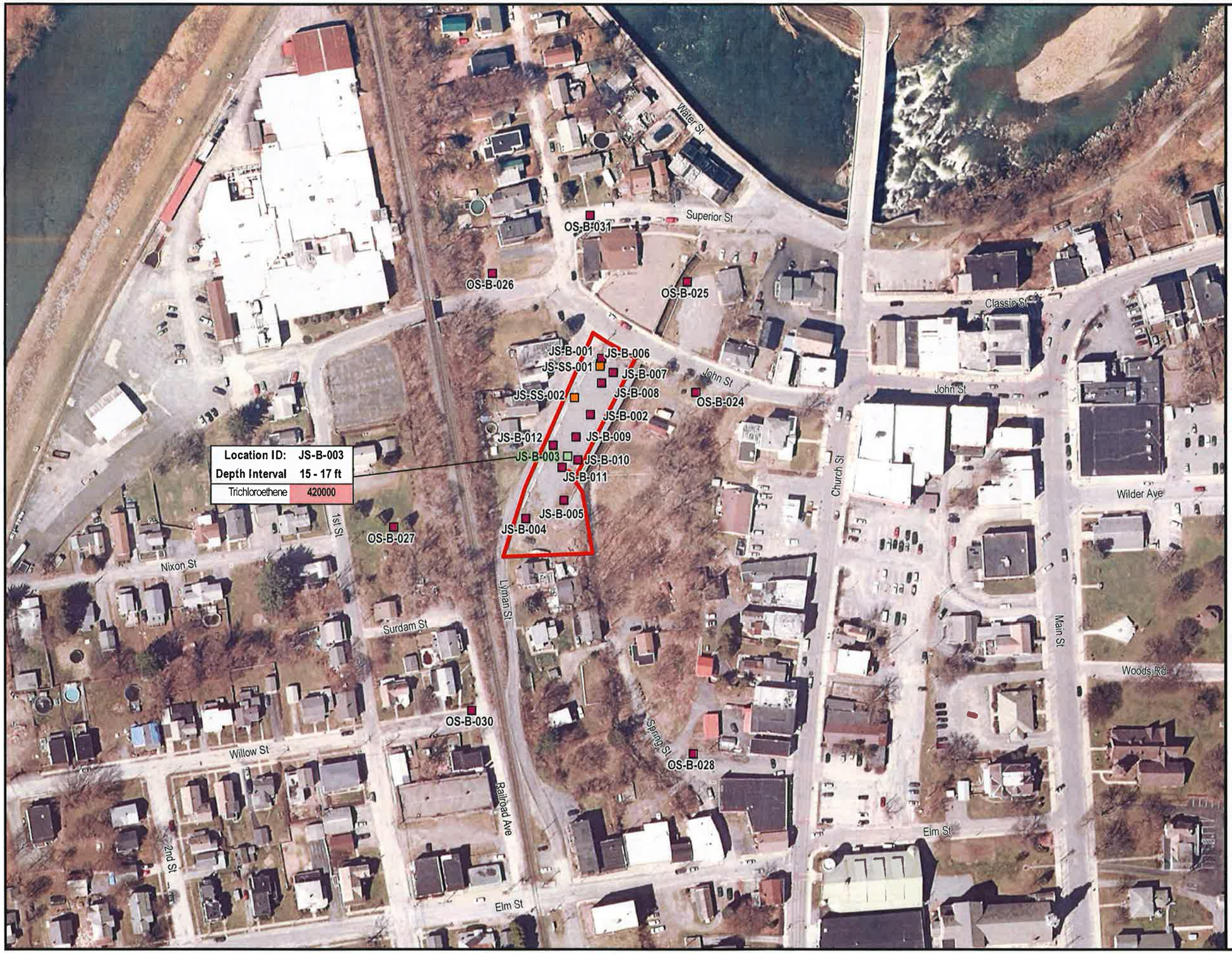


Figure 21: VOC Concentrations in Groundwater Monitoring Well Samples That Exceed Class GA Standards or Guidance Values

Former Oak Materials Fluorglas Division
John Street Property
Village of Hoosick Falls
New York

ERM



Legend

- Exceeds NYS Industrial Use SCO
- Soil boring location with VOC concentrations exceeding potentially applicable SCOs
- Soil boring location with VOC concentrations below potentially applicable SCOs
- Surface Soil Sample Location
- Approximate Property Boundary

NOTES:
VOCs - Volatile Organic Compounds
NYS SCOs - New York State Soil Cleanup Objectives
Concentrations in units of micrograms per kilogram (µg/kg)
Aerial Imagery captured in 2014 from New York State

N

0 25 50 100 150 200
Feet

Figure 22: VOC Concentrations in Soil SamplesThat Exceed Potentially Applicable NYS SCOs
Former Oak Materials Fluorglas Division
John Street Property
Village of Hoosick Falls
New York

ERM

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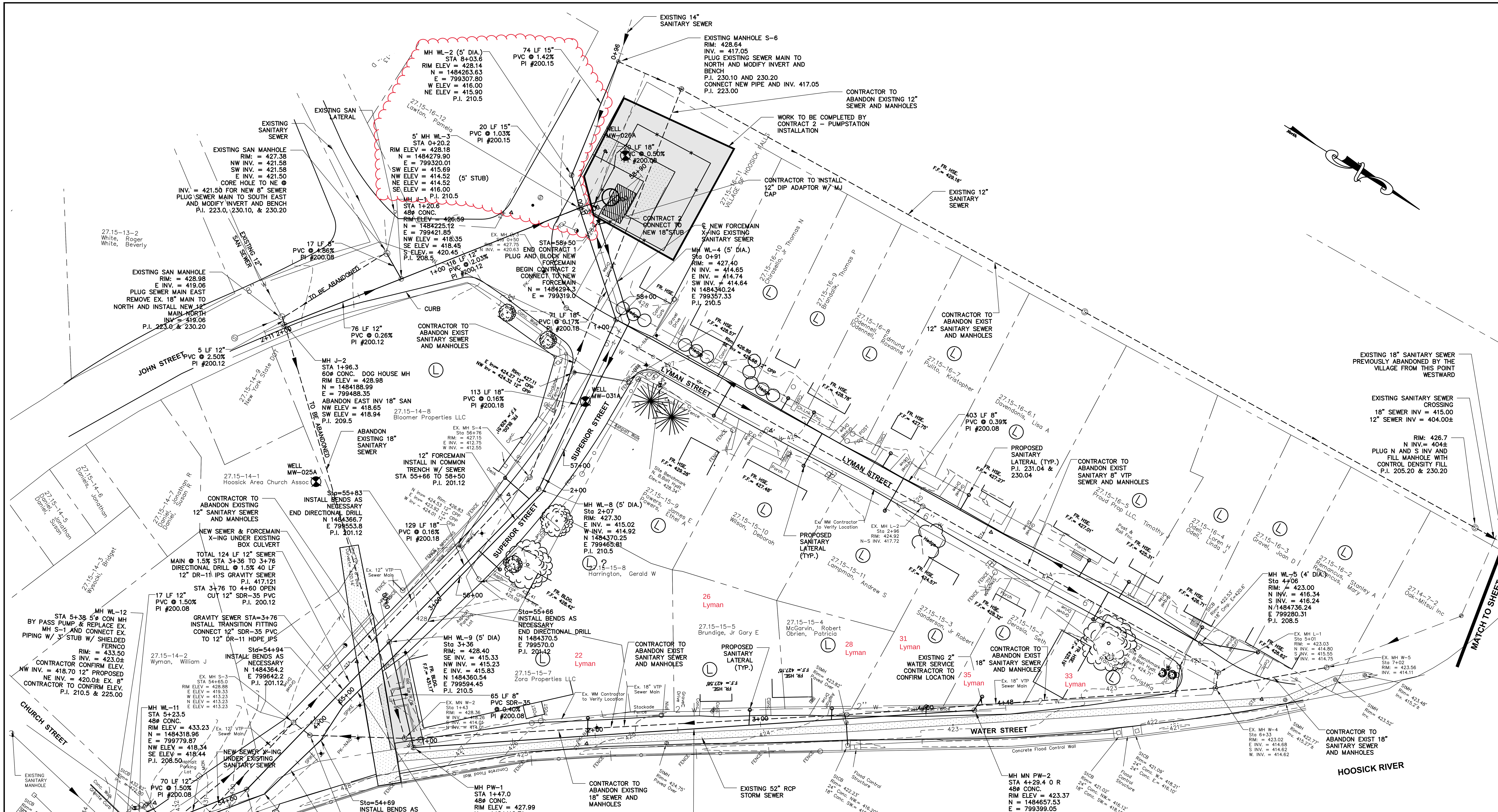
APPENDIX B

SEWER PLANS AND SPECIFICATIONS
(Excerpts from Contract to Be Provided)



GENERAL NOTES (ADDENDUM 2)

WE ACKNOWLEDGE THAT OBTAINING COMPACTION FOR TRENCH FILL MATERIALS MAY BE DIFFICULT DURING WINTER WORK IN THE CASE OF FROZEN FILL MATERIALS. THE TRENCH MAY REQUIRE ADDITIONAL FILL IN THE SPRING TO ADDRESS SETTLEMENT ISSUES. IN CASES OF OPEN EXCAVATION INSTALLATION, RESTORATION OF THE GREENWAY TRAIL MAY OCCUR IN THE SPRING AFTER ANY SETTLEMENT ISSUES HAVE BEEN ADDRESSED.

IN ORDER TO INSTALL MH WL-11 AND WMH WL-12 AND MAKE A CONNECTION TO THE EXISTING SEWER AT THE INTERSECTION OF CHURCH STREET AND SUPERIOR STREET, SEWER FLOW BYPASSING WILL BE REQUIRED UNDER ITEM 206.10. THE ESTIMATED PEAK WET WEATHER FLOW IS 900 GPM AT MANHOLE MH WL-12

GENERALLY SPEAKING, MOST OF THESE SEWER MAINS DEPICTED ON THIS SHEET WILL REQUIRE FILLING WITH CONTROLLED DENSITY FILL, AS THEY ARE LOATED UNDER DRIVEWAYS, STREETS AND PARKING LOTS. THE ONLY EXCEPTION TO THIS IS THE SEGMENT 12" SEWER MAIN LOCATED IN THE TURF AREA TO THE WEST OF LYMAN STREET, WHICH WOULD NOT REQUIRE FILLING WITH CONTROLLED DENSITY FILL. ADDITIONALLY, ALL EXISTING MANHOLES ON THIS STREET SHALL BE ABANDONED PER NOTE NUMBER 1. THE LUMP SUM PAY ITEM 205.20 IS INTENDED TO COVER ALL WORK ASSOCIATED SEWER MAIN AND MANHOLE ABANDONMENT'S IN THIS AREA OF THE VILLAGE, WITH THE EXCEPTION OF ASPHALT RESTORATION, WHICH WILL BE PAID FOR UNDER ITEM 434.10.

SEWER ABANDONMENT NOTES

1. ALL EXISTING SANITARY SEWER MANHOLES REMOVED FROM SERVICE SHALL BE REMOVED TO 3' BELOW GRADE AND BACKFILLED WITH COMPACTED GRAVEL TO BE PAID UNDER ITEM 205.20.
2. EXISTING SANITARY SEWER MAINS REMOVED FROM SERVICE LOCATED UNDER DRIVEWAYS, STREETS, AND PARKING LOTS SHALL BE FILLED WITH CONTROLLED DENSITY FILL TO BE PAID FOR UNDER ITEM 205.20.
3. EXISTING SANITARY SEWERS TO BE ABANDONED ARE DEPICTED AS A DASHED LINE.

PLAN
HORIZ SCALE: 1" = 30'

DRAWING ALTERATION
THE FOLLOWING IS AN EXCERPT FROM THE NEW YORK EDUCATION LAW ARTICLE 145 SECTION 7209 AND APPLIES TO THIS DRAWING.
"IT IS A VIOLATION OF THIS LAW FOR ANY PERSON UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION AND A SPECIFIC DESCRIPTION OF THE ALTERATION".

AS ISSUED FOR CONSTRUCTION

No.	Revisions and Descriptions	By	Date
1.	REVISIONS FROM ADDENDUM 2 ADDED	BJJ	3.07.19

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Project Title: SANITARY SEWER COLLECTION SYSTEM IMPROVEMENTS
CONTRACT 1 - SANITARY SEWER INSTALLATION
VILLAGE OF HOOSICK FALLS
RENSSELAER COUNTY, NEW YORK

Drawing Title: PLAN

Drawn By: BJJ
Checked By: JT
Scale: AS SHOWN
Date: 10/2018

STATE OF NEW YORK · DAVID RONALD WILLARD · LICENSED PROFESSIONAL ENGINEER · No. 090051

MRB group
Engineering, Architecture, Surveying, D.P.C.
The Culver Road Armory, 145 Culver Road, Suite 160, Rochester, New York 14620 585-381-9250
200 Washington St., Suite 403, Watertown, NY 13601 (315) 773-1022
www.mrbgroup.com

Sheet No. G-8

Project No. 0825.15005

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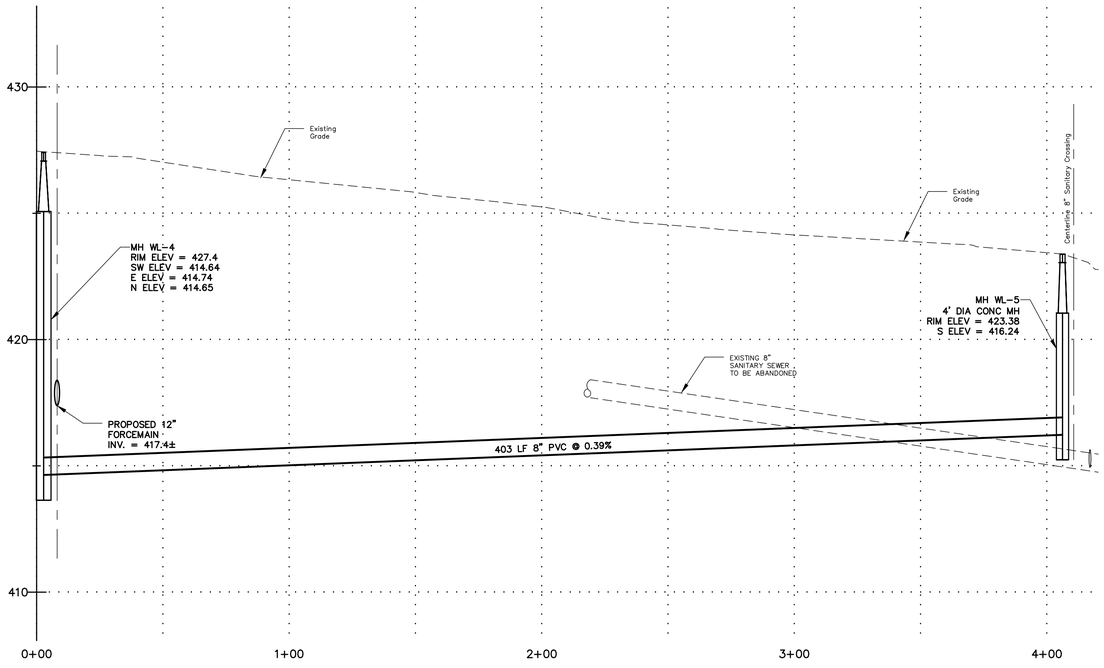
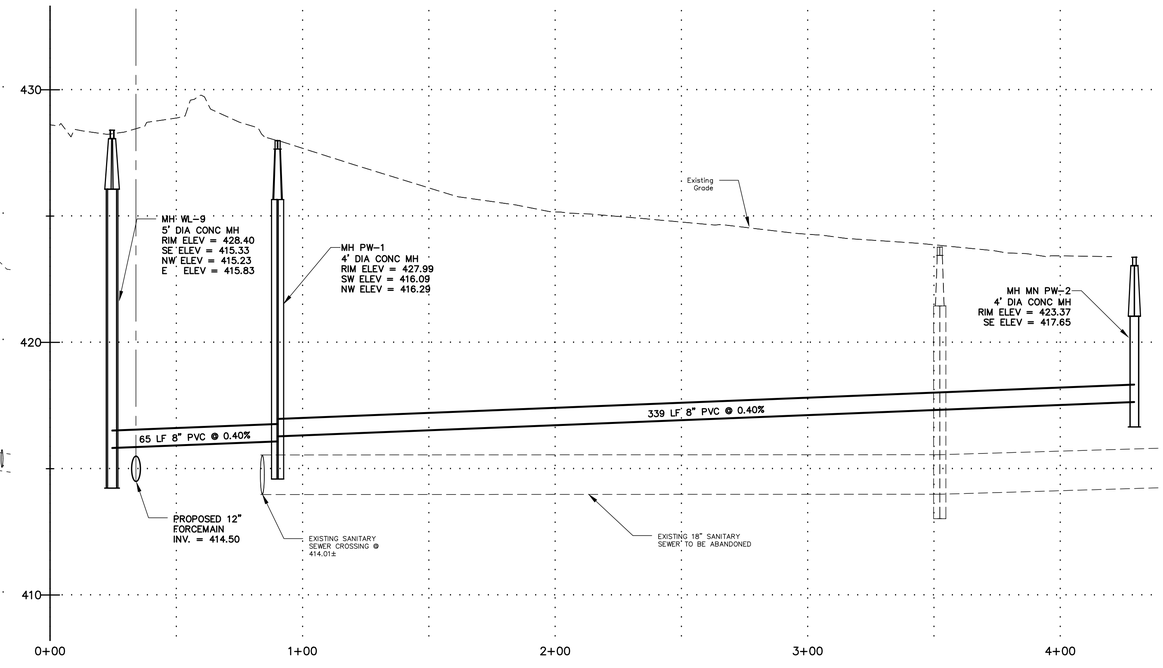
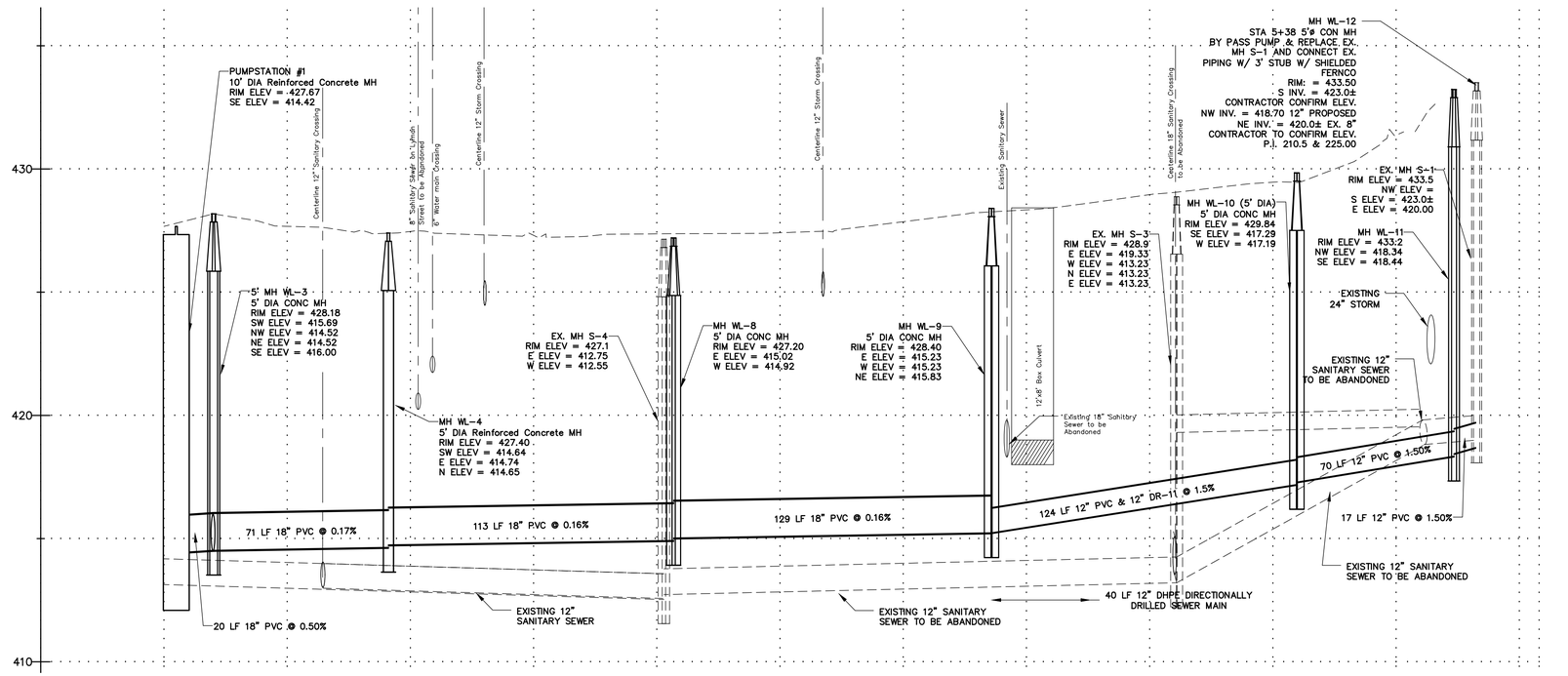


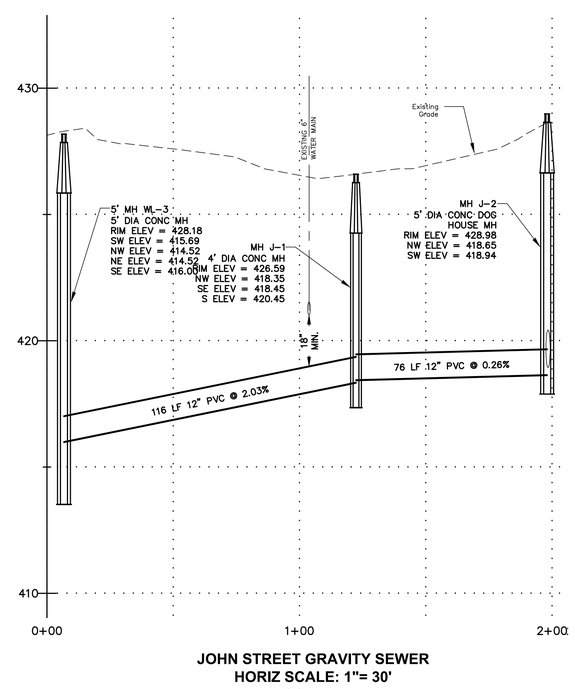
LYMAN STREET GRAVITY SEWER
HORIZ SCALE: 1"= 30'
VERT SCALE: 1" = 3'



WATER STREET GRAVITY SEWER
HORIZ SCALE: 1"= 30'
VERT SCALE: 1" = 3'



SUPERIOR STREET CENTERLINE PROPOSED GRAVITY SEWER
HORIZ SCALE: 1"= 30'
VERT SCALE: 1" = 3'



JOHN STREET GRAVITY SEWER
HORIZ SCALE: 1"= 30'
VERT SCALE: 1" = 3'

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AS ISSUED FOR CONSTRUCTION

No.	Revisions and Descriptions	By	Date

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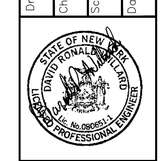
Project Title:
SANITARY SEWER COLLECTION SYSTEM IMPROVEMENTS
CONTRACT 1 - SANITARY SEWER INSTALLATION
VILLAGE OF HOOSICK FALLS
RENSSELAER COUNTY, NEW YORK

Drawing Title: **PROFILE**

Drawn By: BJJ | Checked By: JT | Scale: AS SHOWN | Date: 10/2018



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12 of **25**

Project No. **0825.15005**

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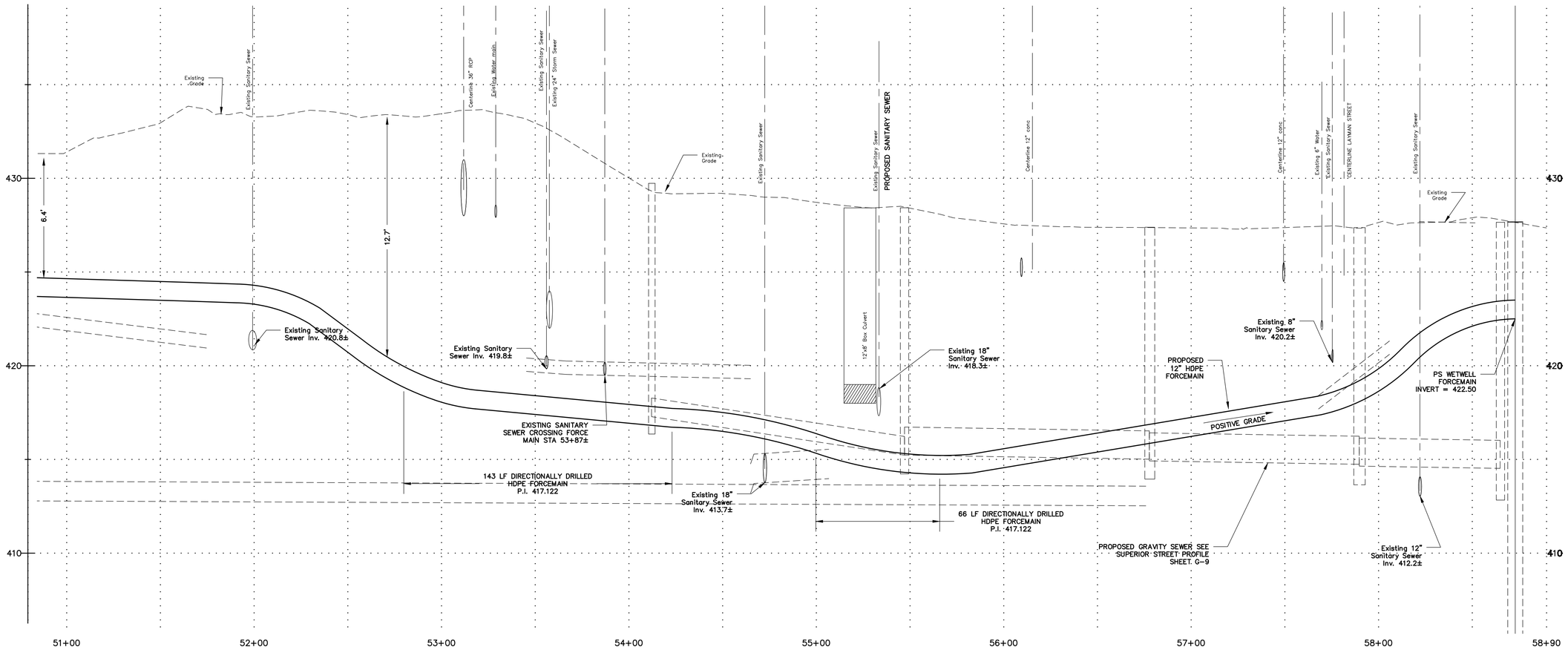
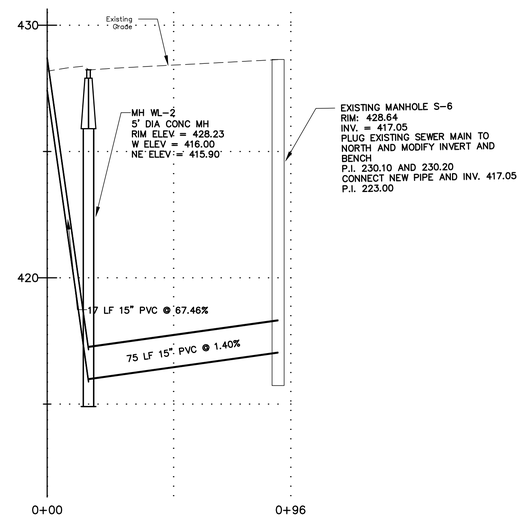


SUPERIOR STREET FORCEMAIN CENTERLINE PROFILE
HORIZ SCALE: 1"= 30'
VERT SCALE: 1" = 3'



FIRST STREET GRAVITY SEWER
HORIZ SCALE: 1"= 30'
VERT SCALE: 1" = 3'

DRAWING ALTERATION
THE FOLLOWING IS AN EXCERPT FROM THE NEW YORK EDUCATION LAW ARTICLE 145 SECTION 7209 AND APPLIES TO THIS DRAWING.
"IT IS A VIOLATION OF THIS LAW FOR ANY PERSON UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION AND A SPECIFIC DESCRIPTION OF THE ALTERATION".

AS ISSUED FOR CONSTRUCTION

No.	Revisions and Descriptions	By	Date

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Project Title:
SANITARY SEWER COLLECTION SYSTEM IMPROVEMENTS
CONTRACT 1 - SANITARY SEWER INSTALLATION
VILLAGE OF HOOSICK FALLS
RENSSELAER COUNTY, NEW YORK

Drawing Title:
PLAN AND PROFILE

Drawn By: BJJ
Checked By: JT
Scale: AS SHOWN
Date: 10/2018

STATE OF NEW YORK — DAVID RONALD MARSHALL — LICENSED PROFESSIONAL ENGINEER — Lic. No. 089981

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Project No. 0825.15005

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating trenches for utilities.
2. Compacted fill from top of utility bedding to existing elevations.
3. Backfilling and compaction.

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

A. Utility: Any buried pipe, duct, conduit, or cable.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

A. On-Site Material: Shall be on site excavated material which is free of all frozen material, boulders, trash, cinders, ashes, asphalt and foreign debris. Unless otherwise shown on the Contract Drawings or as ordered by the Engineer, approved on-site material shall be used for all backfilling outside of pavement areas. Imported backfill material shall meet the requirements of on-site material.

B. Gravel: Referred to as “run of bank” gravel or “R.O.B.” gravel shall be well-graded conforming to NYSDOT Specification Section 304-2.02, Type 4.

C. Crusher Run Stone: Shall conform to NYSDOT Specification Section 304-2.02, Type 2.

D. Subbase Material (in pavement replacement areas): Shall conform to NYSDOT Specification Section 304-2.02, Type 2.

E. Crushed Stone: Shall conform to NYSDOT Specification Section 703-02 and the size as designated on the drawings.

F. Select Granular Fill: Shall conform to NYSDOT Specification Section 203-2.02, C.

PART 3 - EXECUTION

3.1 LINES AND GRADES

A. Lay pipes to lines and grades indicated on Drawings.

1. The Engineer reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.

3.2 PREPARATION

A. Call Dig Safely New York service at 1-800-962-7962 not less than 7 working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum locations.

C. Protect plant life, lawns, and other features remaining as portion of final landscaping.

D. Protect bench marks, existing structures**,** fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E. Maintain and protect above and below grade utilities indicated to remain.

F. Establish temporary traffic control when trenching is performed in public right-of-way. Relocate controls as required during progress of Work.

3.3 TRENCHING

A. Remove all material of every description and of whatever substance encountered to the depths indicated on the drawings or as required by the Owner.

B. Do not advance open trench more than 100 feet ahead of installed pipe.

C. Cut trenches to width indicated on Drawings. Remove water or materials that interfere with Work.

D. Excavate bottom of trenches maximum 2 feet wider than outside diameter of pipe.

E. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.

F. Do not interfere with 45 degree bearing splay of foundations.

G. When Project conditions permit, slope side walls of excavation starting 2 feet above top of pipe. When side walls cannot be sloped, provide sheeting and shoring to protect excavation as specified in this section.

H. When subsurface materials at bottom of trench are loose or soft, excavate to greater depth as directed by Engineer until suitable material is encountered.

I. Cut out soft areas of subgrade not capable of compaction in place. Backfill with material directed by the Engineer and compact to density equal to or greater than requirements for subsequent backfill material.

J. Trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.

K. Correct areas over excavated areas with compacted backfill as specified for authorized excavation as directed by Engineer.

L. Remove excess material not intended for reuse, from site.

M. Stockpile topsoil in area designated on site to depth not exceeding 8 feet and protect from erosion.

3.4 SHEETING AND SHORING

A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.

B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.

C. Design sheeting and shoring to be removed at completion of excavation work.

D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

E. Repair damage to new Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.5 BACKFILLING

A. Backfill trenches to contours and elevations with unfrozen fill materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

C. Place fill material in continuous layers and compact in 12” lifts.

D. Employ placement method that does not disturb or damage utilities in trench.

E. Maintain optimum moisture content of fill materials to attain required compaction density.

F. Do not leave trench open at end of working day.

G. Protect open trench to prevent danger to the Owner and the public.

3.6 FIELD QUALITY CONTROL

A. Perform laboratory material tests in accordance with ASTM D1557.

B. Perform in place compaction tests in accordance with the following:

1. Density Tests: ASTM D2922.
2. Moisture Tests: ASTM D3017.

C. When tests indicate Work does not meet specified requirements, compact, and retest.

D. Frequency of Tests: Maybe ordered by the Engineer depending on contractors operations.

3.7 PROTECTION OF FINISHED WORK

A. Reshape and re-compact fills subjected to vehicular traffic during construction.

3.8 SCHEDULE

A. Bedding and Backfill Around Pipe:

1. All pipe beds shall be hand shaped and of the material as shown on the detail sheet.
2. When conditions warrant, crusher run stone shall be used within rock and crushed stone within unstable trench bottom conditions.
3. Bedding material shall be deposited up to the springline of the pipe, completely encasing the lower half of the pipe.

B. Trench Backfill and Maintenance:

1. From top of the bedding of the pipe, the trench shall be backfilled with:
   a. On-Site Material – under lawn areas.
   b. Full depth Crusher Run Stone – under roads (within the inside shoulder limits)
   c. 12” of Crusher Run Stone over acceptable on-site material under driveways, parking areas and shoulder areas.

2. Each layer of backfill shall be moistened or dried as required and shall be compacted tin the following densities:
   a. Bedding to springline of pipe – 95%.
   b. Under traffic areas (roads, driveways, parking lots, etc) – 95%.
   c. Under lawn areas -85%.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Dewatering system.
2. Surface water control system.
3. System operation and maintenance.
4. Water disposal.

1.2 REFERENCES

A. ASTM International:

1. ASTM C33 - Standard Specification for Concrete Aggregates.

1.3 DEFINITIONS

A. Dewatering includes the following:

1. Lowering of ground water table and intercepting horizontal water seepage to prevent ground water from entering excavations.
2. Reducing piezometric pressure within strata to prevent failure or heaving of excavations.
3. Disposing of removed water.

B. Surface Water Control: Removal of surface water within open excavations.

1.4 SYSTEM DESCRIPTION

A. Provide dewatering and surface water control systems to permit Work to be completed on dry and stable subgrade.

1. Install well points to dewater and relieve hydrostatic pressure as needed within the work area.

B. Furnish standby equipment stored at Project site and ready for immediate use upon failure of dewatering equipment. Provide the following standby equipment, but not less than one of each type:

1. Dewatering Centrifugal Pumps.
2. Portable Electric Generators.

1.5 PERFORMANCE REQUIREMENTS

A. Design dewatering systems to:

1. Lower water table within areas of excavation to minimum one (1) feet below bottom of excavation to permit Work to be completed on dry and stable subgrade.
2. Relieve hydrostatic pressures in confined water bearing strata below excavation to eliminate risk of uplift or other instability of excavation.
3. Prevent damage to adjacent properties, buildings, structures, utilities, and facilities from construction operations.
4. Prevent loss of fines, quick condition, or softening of foundation subgrade.
5. Maintain stability of sides and bottoms of excavations and trenches.

B. Design surface water control systems to:

1. Collect and remove surface water and seepage entering excavation.

1.6 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Shop Drawings: Signed and sealed by professional engineer.

1. Indicate dewatering system layout, well depths, well screen lengths, dewatering pump locations, pipe sizes and capacities, grades, filter sand gradations, surface water control devices, valves, and water disposal method and location.
2. Indicate primary and standby power system location and capacity.
3. Indicate layout and depth of monitoring wells, piezometers and flow measuring devices for system performance measurement.
4. Include detailed description of dewatering and monitoring system installation procedures and maintenance of equipment.
5. Include description of emergency procedures to follow when problems arise.

C. Product Data: Submit data for each of the following:

1. Dewatering Pumps: Indicate sizes, capacities, priming method, motor characteristics.
2. Pumping equipment for control of surface water within excavation.

D. Design Data: Signed and sealed by professional engineer.

1. Indicate design values, analyses, and calculations to support design.
2. Include description and profile of geology, soil, and groundwater conditions.

E. Field Reports: Test and monitoring reports as specified in Field Quality Control article.

1.7 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations and depths of capped wells and piping abandoned in place.

1.8 QUALITY ASSURANCE

A. Comply with authorities having jurisdiction for the following:

1. Drilling and abandoning of wells used for dewatering systems.
2. Water discharge and disposal from pumping operations.

B. Obtain permit from NYSDEC under State Pollutant Discharge Elimination System (SPDES), for storm water discharge from construction sites.

1.9 QUALIFICATIONS

A. Installer: Company specializing in performing work of this section with minimum Two (2) years documented experience and responsible for design, operation, and maintenance of dewatering system.

1. Assume sole responsibility for dewatering and surface water control systems and for loss or damage resulting from partial or complete failure of protective measures and settlement or resultant damage caused by ground water control operations.

B. Design, install, and monitor operation of dewatering under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of New York.

1.10 PRE-INSTALLATION MEETINGS

A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.11 SEQUENCING

A. Section 01 10 00 - Summary: Requirements for sequencing.

B. Sequence work to obtain required permits before start of dewatering operations.

C. Sequence work to install and test monitoring systems minimum 7 days before testing and operating dewatering systems.

D. Sequence work to install and test dewatering and surface water control systems minimum 7 days before starting excavation or trenching.

1.12 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

B. Coordinate work to permit the following construction operations to be completed on dry stable substrate.

1. Excavation for structures specified in Section 31 23 16.
2. Trenching for utilities specified in Section 31 23 17.

PART 2 - PRODUCTS

2.1 DEWATERING EQUIPMENT

A. Select dewatering equipment to meet specified performance requirements.

2.2 MONITORING EQUIPMENT

A. Piezometers: Pneumatic type for push in installation to monitor water elevation.

2.3 ACCESSORIES

A. Valves and Fittings: Furnish valves and fittings to isolate each well from header pipe and to prevent loss of pump prime.

B. Filter Sand: ASTM C33; natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter; graded to suit well screen.

C. Grout: Mixture of portland cement and bentonite clay or sand suitable for sealing abandoned wells and piping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Conduct additional borings and investigations to supplement subsurface investigations identified in Section 00 31 00 as required to complete dewatering system design.

C. Call Local Utility Line Information service not less than three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

D. Employ licensed land surveyor to provide following documentation:

1. Survey existing adjacent buildings, structures, and improvements for position and elevation of principal elements before and after completion of dewatering operations.

3.2 PREPARATION

A. Protect existing adjacent buildings, structures, and improvements from damage caused by dewatering operations.

3.3 MONITORING WELLS

A. Install monitoring wells at locations indicated on shop drawings as specified for dewatering wells.

B. Test each monitoring well point to verify installation is performing properly.

C. Install piezometers, calibrate, and test for proper operation.

D. Protect monitoring well standpipes from damage by construction operations.

E. Maintain accessibility to monitoring wells continuously during construction operations.

F. Maintain monitoring wells until groundwater is allowed to return to normal level.

3.4 DEWATERING SYSTEM

A. Install dewatering system in accordance with shop drawings.

B. Locate system components to allow continuous dewatering operations without interfering with installation of permanent Work and existing public rights-of-way, sidewalks, and adjacent buildings, structures, and improvements.

C. Drill wells in sizes and to depth indicated. Provide temporary surface casing when required to stabilize soil while advancing well.

D. While drilling and installing well keep bore hole filled with natural or organic drilling fluid. Bentonite clay drilling fluid is not permitted.

E. Attach well screen to riser pipe. Attach centralizers to riser pipe at maximum [20] [40] feet spacing to keep screen and riser centered in bore hole. Insert well screen and riser pipe into well to elevation indicated.

F. Develop wells to remove clay, silt, and sand from well screen and immediate vicinity of bore hole.

G. Test well for proper water flow through well screen and pumping rate for dewatering system operation. Repeat development until well meets performance requirements.

H. Cover and seal top of well until pump is installed.

I. Install pumps in accordance with manufacturer's instructions.

J. Connect pumps to discharge header. Install valves to permit pump isolation.

3.5 SURFACE WATER CONTROL SYSTEM

A. Provide ditches, berms, and other devices to divert and drain surface water from excavation area.

B. Divert surface water and seepage water within excavation areas into sumps and pump water into temporary settling basins in accordance with NYSDEC Storm water Pollution Prevention requirements.

C. Control and remove unanticipated water seepage into excavation.

3.6 SYSTEM OPERATION AND MAINTENANCE

A. Operate dewatering system continuously until backfill is minimum 2 feet above normal ground water table elevation or backfilling is complete.

B. Provide 24-hour supervision of dewatering system by personnel skilled in operation, maintenance, and replacement of system components.

C. Conduct daily observation of dewatering system and monitoring system. Make required repairs and perform scheduled maintenance.

D. Fill fuel tanks before tanks reach 25 percent capacity.

E. Start emergency generators at least twice each week to check operating condition.

F. When dewatering system cannot control water within excavation, notify Architect/Engineer and stop excavation work.

1. Supplement or modify dewatering system and provide other remedial measures to control water within excavation.
2. Demonstrate dewatering system operation complies with performance requirements before resuming excavation operations.

G. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.

H. Correct unanticipated pressure conditions affecting dewatering system performance.

I. Do not discontinue dewatering operations without Architect/Engineer's approval.

3.7 WATER DISPOSAL

A. Discharge water in accordance with NYSDEC Storm water Pollution Prevention requirements.

3.8 SYSTEM REMOVAL

A. Remove dewatering and surface water control systems after dewatering operations are discontinued.

B. Remove piezometers and monitoring wells.

C. Fill abandoned wells in accordance with NYSDEC standards.

D. Fill abandoned piping with grout.

E. Repair damage caused by dewatering and surface water control systems or resulting from failure of systems to protect property.

3.9 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. After dewatering system is installed, perform pumping test to determine when selected pumping rate lowers water level in well below pump intake. Adjust pump speed, discharge volume, or both to ensure proper operation of each pump.

C. Monitor and record the following, daily, until steady state conditions occur. Then monitor and record conditions twice each week.

1. Average discharge flow rate for each deep well, eductor header, and well point.

D. Monitor and record the following, daily, until dewatering system is discontinued. Then monitor and record conditions weekly until Work is completed, monitoring wells are removed, or until directed by Engineer.

1. Ground water elevation.

E. Monitor ground water discharge for sand content. Sample and test water from each well weekly for sand content. Maximum permitted sand content 5 parts per million.

F. Monitor ground water discharge for contamination while performing pumping in vicinity of potentially contaminated sites. Sample and test water weekly for contaminates.

G. Survey existing adjacent buildings, structures, and improvements weekly to detect movement in comparison to original elevations during dewatering operations.

1. Notify Engineer immediately of measured movement.

H. Submit initial installation reports including the following:

1. Installation and development reports for well points and pumps.
2. Installation and baseline reports for monitoring wells and piezometers.
3. Test reports of monitoring well water analysis.
4. Initial dewatering flow rates.

I. Submit weekly monitoring reports including the following:

1. Dewatering flow rates.
2. Piezometer readings.
3. Test reports of discharge water analysis.
4. Maintenance records for dewatering and surface water control systems.

END OF SECTION 31 23 19

APPENDIX C

COMMUNITY AIR MONITORING PLAN (CAMP)

Appendix B

Community Air Monitoring Plan

COMMUNITY AIR MONITORING PLAN
OAK MATERIALS – RIVER ROAD 1, 2, AND 3 (442008) AND
FORMER OAK MATERIAS FLUORGLAS DIVISION - JOHN STREET (442049)
TOWN OF HOOSICK AND VILLAGE OF HOOSICK FALLS
RENSSELAER COUNTY, NEW YORK

This Community Air Monitoring Plan (CAMP) involves real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of the designated work area when intrusive activities are in progress. Intrusive activities include soil or waste excavation, grading, staging, movement, or handling; test pitting or trenching; and/or the installation of soil borings. The CAMP provides a measure of protection for on-Site workers and the downwind community (i.e., off-site receptors including residences, parks, businesses, etc.) not directly involved with the subject work activities. Routine monitoring is required to evaluate concentrations and corrective action and/or work stoppage may be required to abate emissions detected at concentrations above specified action levels. Routine data collected during implementation of the CAMP may also help document that work activities did not spread compounds of potential concern off-site through the air. Reliance on the procedures and action levels described in this CAMP should not preclude simple, common sense measures to keep VOCs, dust, and odors at a minimum around work areas.

COMMUNITY AIR MONITORING PLAN

VOC concentrations in air will be measured using calibrated photoionization detectors (PIDs). Particulate matter concentrations will be measured using calibrated electronic aerosol monitors.

Relevant weather conditions including wind direction, speed, humidity, temperature, and precipitation will be evaluated and recorded prior to the initiation of subsurface intrusive activities. Background readings of VOCs and particulate matter will be collected on Site prior to the initiation of field work on each day that subsurface intrusive work will be performed. Additional background measurements may be collected if weather conditions change significantly.

Continuous monitoring for VOCs and particulate matter will be performed upwind and downwind of the work area during subsurface intrusive activities.

Periodic monitoring for VOCs will be performed during non-intrusive activities if requested by a New York State Department of Environmental Conservation (NYSDEC) and/or New York State Department of Health (NYSDOH) on-Site representative. Non-intrusive activities include any work activity that does not

disturb the subsurface or staged soil piles, including routine site visits, installation of equipment, operations and maintenance, surveying, etc. Periodic monitoring if performed will consist of collecting readings downwind of the work area at the following intervals:

- upon arrival at a sample location or other work activity location;
- during performance of the relevant work activity; and
- prior to leaving a sample location or other work activity location.

VOC MONITORING, RESPONSE LEVELS, AND ACTIONS

VOCs will be monitored at the downwind perimeter on a continuous basis during intrusive activities. Upwind concentrations will be measured continuously or at the start of each workday, during the work activity, and at the end of each work day to establish background conditions. Monitoring equipment that does not require factory calibration will be calibrated at least once a day. Calibration may be performed more frequently if Site conditions or instrument operating conditions are highly variable. The monitoring equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below. The monitoring equipment will be equipped with an alarm to indicate an exceedance of a specified action level.

1. If the ambient air concentration of total VOCs at the downwind perimeter exceeds 5 parts per million (ppm) above background (upwind perimeter) for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total VOC concentration readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total VOC concentrations at the downwind perimeter persists at concentrations greater than 5 ppm over background but less than 25 ppm, work activities will be halted, the source of the VOCs identified, corrective action will be taken to abate emissions (if the source is related to site activities), and monitoring will be continued. After these steps, work activities will resume provided that the total VOC concentration 200 feet downwind of the work area, or half the distance to the nearest potential receptor, whichever is less (but in no case less than 20 feet), is below 5 ppm above background for the 15-minute average.

3. If the total VOC concentration is greater than 25 ppm above background at the downwind perimeter, intrusive work activities will be halted and the source of the VOCs will be identified. Work will resume when additional continuous monitoring demonstrates that VOC concentrations have dropped below 25 ppm for a minimum of one-half hour, and the total VOC

concentration 200 feet downwind of the work area, or half the distance to the nearest potential receptor, whichever is less (but in no case less than 20 feet), is below 5 ppm above background for the 15-minute average.

4. All 15-minute readings will be recorded and will be available for review by NYSDEC and/or NYSDOH personnel. Instantaneous VOC readings (if any) used for decision purposes will also be recorded.

PARTICULATE MONITORING, RESPONSE LEVELS, AND ACTIONS

Fugitive dust migration from the work area will be visually assessed during intrusive activities. Particulate concentrations will be monitored continuously at the downwind perimeter during intrusive activities. Particulate monitoring will be performed using real-time electronic aerosol monitoring equipment capable of measuring particulate matter less than 10-micrometers in size (PM-10) and capable of integrating over a period of 15 minutes for comparison to the airborne particulate action levels referenced below. The monitoring equipment will be equipped with an alarm to indicate an exceedance of a specified action level.

1. If the downwind PM-10 concentration is 100 micrograms per cubic meter ($\mu g/m^3$) greater than background for the 15-minute period, or if airborne dust is observed leaving the work area, dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that downwind PM-10 concentration does not exceed 150 $\mu g/m^3$ above background and provided that significant visible dust is not migrating from the work area.

2. If downwind PM-10 concentrations are greater than 150-$\mu g/m^3$ above background after the implementation of dust suppression activities, intrusive activities will be stopped and a re-evaluation of the intrusive activities will be initiated. Work can resume provided that dust suppression measures and/or other controls are successful in reducing the downwind PM-10 concentration to within 150 mcg/m^3 of background and in preventing significant visible dust migration.

3. All 15-minute readings will be recorded and will be available for review by NYSDEC and/or NYSDOH personnel. Instantaneous readings (if any) used for decision purposes will also be recorded.

APPENDIX D

HEALTH AND SAFETY PLAN
(HASP)

Sterling Environmental Engineering, P.C.

SEWER IMPROVEMENT PROJECT

FORMER OAK MATERIALS FLUORGLAS DIVISION
SUPERFUND SITE
HOOSICK FALLS, NEW YORK

HEALTH AND SAFETY PLAN
(HASP)

Prepared for:

Village of Hoosick Falls
24 Main Street
Hoosick Falls, New York 12090

Prepared by:

Sterling Environmental Engineering, P.C.
24 Wade Road
Latham, New York 12110

May 13, 2019

"Serving our clients and the environment since 1993"

SEWER IMPROVEMENT PROJECT

FORMER OAK MATERIALS FLUORGLAS DIVISION
SUPERFUND SITE
HOOSICK FALLS, NEW YORK

HEALTH AND SAFETY PLAN (HASP)

Table of Contents

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1.0 SITE SPECIFIC SUPPLEMENT

Project Information

Project Name: Hoosick Falls Sewer Improvement Project
Site Address: John Street / 3 Lyman Street and Surrounding Area
Sterling Project Manager: Andrew Millspaugh, PE
Cell Phone: 518-573-4378
Email: Andrew.Millspaugh@sterlingenvironmental.com

Hazard Assessment

Scope of Work:	The Village of Hoosick Falls has contracted to implement a sanitary sewer improvement project adjacent to the Inactive Hazardous Waste Site ID 442049 known as the former Oak Materials Fluorglas Division Superfund Site. Sewer improvements will be performed in areas of known contamination. STERLING will be providing community air monitoring and excavation soil/water screening in accordance with an Environmental Work Plan.
Suspected Contaminants:	Investigations at the Site have identified contamination of the groundwater and soils with chlorinated solvents and Per/Polyfluoroalkyl Substances (PFAS). Specifically, the identified contaminants of concern (COC) are: trichloroethene (TCE); 1,1,1-trichloroethane (TCA); and perfluorooctanoic acid (PFOA). Soil: PFAS and VOCs Groundwater: PFAs and VOCs Air: Particulates and VOCs
Contaminant Exposure Routes:	Skin: Prevent skin contact. Wear chemical resistant gloves when handling contaminated media. If skin becomes exposed, soap wash skin immediately. Eyes: Prevent eye contact. Wear safety glasses at all times. If contaminants enter eyes, irrigate eyes immediately. Ingestion: Do not ingest contaminated media. Do not eat, drink, or smoke in exclusion zones. Wash hands thoroughly before eating. Seek medical attention if ingestion occurs. Inhalation: Do not inhale visible dust. Stand upwind of work zones. Seek medical attention for difficulty breathing.
Potential Hazards:	Strenuous activity: Warm up and stretch muscles prior to task. Plan the task to use the correct tool, have appropriate supplies, and coordinate tasks efficiently. Use proper lifting techniques (lift with your legs, not your back). Use a buddy or cart to lift or move items over 50 pounds. Handing contaminated media: Wear appropriate PPE and avoid contacting contaminated media with bare skin. Follow SOPs and site-specific work plans for collecting environmental samples.

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	Work near or around heavy equipment: Be aware of work areas and equipment travel paths. Maintain clear line of site with operator and never enter travel path or swing radius without establishing visual contact. Wear high visibility clothing. Never work under an overhead load. Work near roadway/traffic: Be aware of surroundings and proximity to traffic. Wear high-visibility reflective vest. Use vehicle hazard flashers and place traffic cones to designate work area. Slips, trips, and falls: Minimize distractions and stay alert when traversing uneven or unfamiliar terrain. Wear appropriate footwear for the conditions and avoid carrying bulky or awkward items. Use three points of contact when climbing or descending. Practice good housekeeping. Cold weather work: Know the effects of wind chill and be familiar with symptoms of frostbite and hypothermia. Wear multiple layers of loose fitting clothing (wool or synthetic material. NO COTTON). Wear an outer layer of wind/water proof material. Wear insulated hand and footwear. Schedule work for warmer time of day. Take breaks to warm up inside or in a vehicle. Warm weather work: Know the effects of the heat index and be familiar with symptoms of dehydration, heat stress, and heat stroke. Wear loose clothing and hat to block sun. Drink cool fluids regularly. Schedule work for cooler time of day. Take breaks to cool down in shaded area with air conditioning. Work near and around excavations: Be aware of utility markings. Stay at least 3 feet away from edge of excavation and do not enter any excavation deeper than 4 feet.

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Personal Protective Equipment / Monitoring Equipment / Safety Equipment

Item	Not Applicable	Required	Have Available
Personal Protective Equipment			
High-Visibility Shirt		**X**	
Reflective Vest		**X**	
Hard Hat		**X**	
Safety Shoes		**X**	
Muck Boots (or equal)			**X**
Hearing Protection		**X**	
Safety Glasses		**X**	
Respirator	**X**		
Personal Floatation Device	**X**		
Coveralls (e.g., Tyvek)	**X**		
Rain Gear			**X**
Cold Weather Gear			**X**
Monitoring Equipment			
Photoionization Detector		**X**	
Dust Monitor		**X**	
4-Gas Meter	**X**		
Safety Equipment			
First Aid Kit		**X**	
Cell Phone		**X**	
Fire Extinguisher (in vehicle)	**X**		
Flashlight	**X**		
Road Cones	**X**		

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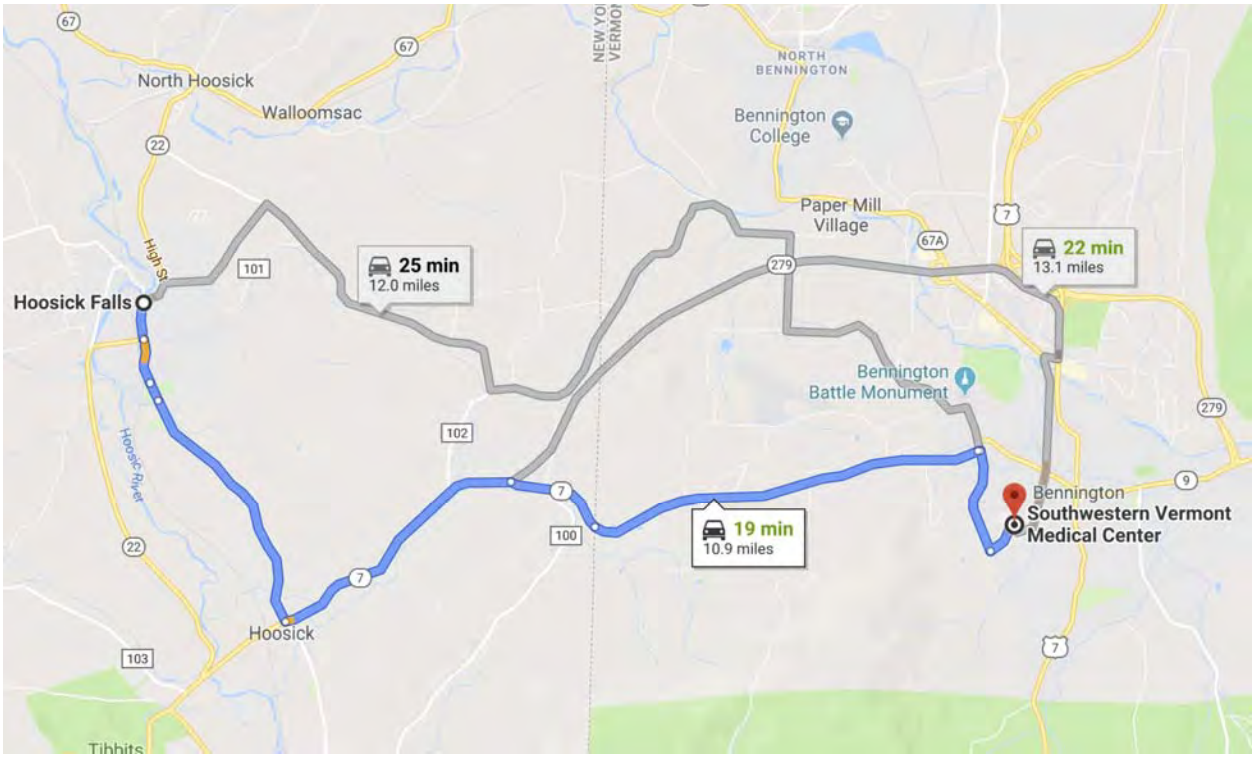
Emergency Services / Contacts

Emergency:	911
Fire:	West Hoosick Fire Department, (518) 686-1814
Police:	Hoosick Falls Police Department, (518) 686-7651
County Sheriff:	Rensselaer County Sheriff, (518) 266-1900
Poison Control Center	(800) 222-1222
NYSDEC Spills	(800) 457-7362
Medical Facility	Southwestern Vermont Medical Center, (802) 442-6361

Emergency Room Southwestern Vermont Medical Center
100 Hospital Drive
Bennington, VT 05201

Directions Turn by Turn Directions
Head **SOUTH** on **Church St**
Turn **LEFT** onto **NY-7 East**
Turn **RIGHT** onto **Monument Ave**
Turn **LEFT** onto **Hospital Dr**
Arrive at Hospital Emergency Room

Emergency Room Map:



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HEALTH AND SAFETY PLAN

PERSONNEL ACCEPTANCE FORM

By signing below, I acknowledge that I have reviewed this Health and Safety Plan (HASP), am aware of site-specific hazards, and agree to comply with HASP.

NAME (PRINT)	SIGNATURE	DATE

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2.0 GENERAL INFORMATION

The Health and Safety Plan (HASP) identifies specific measures to ensure that hazardous substances or conditions do not adversely impact the health and safety of personnel and the general community (public) for site operations. The HASP is intended to identify potential hazards and appropriate precautions as defined by OSHA 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response).

All personnel working on this project must read this HASP, acknowledge understanding of this plan, and abide by its requirements.

In general, personnel are responsible for complying with all regulations and policies applicable to the work they are performing. The Project Manager is authorized to stop work if any personnel/subcontractor fails to adhere to required health and safety procedures.

In addition to this HASP, each contractor must provide their own HASP that addresses minimum training requirements and potential hazards for activities specific to their scope of work.

2.1 Modifications to this Plan

Requirements and guidelines in this HASP are subject to modification by the Project Manager in response to additional information obtained during field work regarding the potential for exposure to hazards. Updates will be communicated to field personnel as they are made.

3.0 DESIGNATION OF RESPONSIBILITIES

Implementing this HASP is the responsibility of all personnel. The Project Manager is responsible for overall project administration, including health and safety. The Field Team Leader is responsible for ensuring the HASP is implemented in the field and is the primary point of contact to the Project Manager. The Project Manager and Field Team Leader will be designated prior to any site activities.

The Project Manager is responsible for:

- Ensuring the availability, use, and proper maintenance of specified personal protective equipment (PPE), decontamination, and other health or safety equipment.
- Maintaining a high level of safety awareness among personnel/subcontractors and communicating pertinent matters promptly.
- Ensuring all field activities are performed in a manner consistent with this HASP.
- Coordinating with emergency response personnel and medical support facilities.
- Initiating immediate corrective actions in the event of an emergency or unsafe condition.
- Notifying, as applicable, the project owner, regulatory agencies, and other necessary entities of any emergency, unsafe condition, problem encountered, or exception to the requirements of this HASP.
- Recommending improved health and safety measures.

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The Project Manager generally provides office support to the field team, but may be present during field activities. However, the presence of the Project Manager shall in no way relieve any person or company of its obligations to comply with the requirements of the HASP and all applicable Federal, State, and local laws and regulations.

The Field Team Leader is responsible for:

- Communicating with the Project Manager during field activities.
- Ensuring the HASP is implemented during field activities.
- Leading daily "tailgate" safety talks prior to beginning work.
- Monitoring for dangerous conditions during field activities.
- Ensuring proper decontamination of personnel and equipment.

All personnel involved in the project must be familiar with and conform to the safety protocols prescribed in this HASP. Relevant safety observations must be communicated to the Project Manager to ensure that these valuable inputs are shared to improve overall safety. Individual project members are the key elements in ensuring health and safety compliance. Every project member is considered responsible for implementing and following this HASP.

3.1 Daily Tailgate Meeting

Each work day before beginning site activities, the Field Team Leader will lead a "tailgate" safety meeting with all personnel. On larger projects, daily safety meetings may be lead by a dedicated safety officer for a general contractor. In these instances, STERLING personnel should attend and participate in the safety meeting. Safety meetings should review the day's work to be performed, anticipated hazards, and the weather forecast. An opportunity should be given to allow all workers to ask questions. If personnel arrive to the site after the safety meeting has ended, they should seek out the Field Team Leader to receive a summary of the meeting before beginning site work.

3.2 Stop Work Authority

All personnel have authority to **STOP WORK** if or when they observe an unsafe act in progress or about to occur, or if a task is unclear and needs additional planning. Personnel will initiate a stop work order by notifying the Field Team Leader. If the Field Team Leader is in control of the task, work will be stopped immediately, the task will be reviewed, changes will be made to remedy the unsafe condition, and then work will resume if unsafe condition is corrected.

If the Field Team Leader is not in control of the task (e.g., unsafe act by a contractor), the Field Team Leader will immediately direct STERLING personnel to stop work and move to a safe location. If it is safe to do so, the Field Team Leader will notify those involved in the unsafe task to stop work to review the task. If it is unsafe, the Field Team Leader will notify a project representative in accordance with the chain of command (e.g., site superintendent). The Field Team Leader will then notify the STERLING Project Manager. Following notification, the Field Team Leader, Project Manager, and other project personnel will review the task, implement necessary corrections, and then resume work.

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4.0 HEALTH AND SAFETY CONCERNS

4.1 Suspected Contaminant Hazards

Elevated contaminant concentrations in soil, groundwater, surface water, and/or air may be present above screening levels as indicated in Section 1.0 – Site-Specific Supplement.

Although unlikely, unknown or unexpected materials of a hazardous nature may be encountered during ground intrusive activities. No work will be conducted if field observations or field measurements indicate that there is a potential uncontrolled exposure to undefined hazards, or that exposures may exceed protection afforded by the requirements in this HASP. Field activities will be performed in accordance with standard operating procedures (SOP) and site-specific work plans.

4.2 Airborne Exposure Limits

Work zone air monitoring will be performed during intrusive activities if suspected contaminants include VOCs or metals. VOCs will be monitored with a photoionization detector calibrated with isobutylene to report total VOCs over a range of 0 to 100 ppm and a precision of 0.1 ppm. Metals will be monitored using particulate dust as a surrogate. Air monitoring will be performed in the work zone at a respirable height. Action levels for implementing engineering controls, administrative controls, or upgrading to Level C PPE are indicated in the table below.

Parameter	Permissible Exposure Limit (PEL)
Trichloroethene	100 ppm
1,1,1-Trichloroethane	350 ppm
Total VOCs	**100 ppm**
Particulate Dust (PM-10)	**150 µg/m^3**

4.3 Personal Protective Equipment (PPE)

PPE requirements for Site are listed in Section 1.0 – Site-Specific Supplement. Most sites require Level D attire including the following PPE: hard hat, steel-toed boots, high visibility shirts, and safety glasses. Handling contaminated media will require use of nitrile gloves. Depending on suspected contaminants, air monitoring may be performed to determine when to evacuate a work area or when to upgrade to Level C PPE. Only personnel properly trained and fit-tested for the appropriate respirator will be allowed to upgrade to Level C PPE.

4.4 Suspected Safety Hazards

Suspected safety hazards are listed in Section 1.0 – Site-Specific Supplement.

Strenuous Activity:
Field activities often involve strenuous activity such as traversing uneven terrain to reach sampling locations and lifting supplies and equipment. It is important to warm up and stretch muscles prior to beginning field tasks. Simple stretching should be performed to loosen muscles in the legs and back. Field tasks should be planned in advanced to ensure correct tools and supplies are available. Tasks should be coordinated efficiently to minimize strenuous activity to the greatest extent possible.

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Work Near or Around Heavy Equipment

Typical hazards encountered include those inherent with proximity to heavy equipment operation such as being struck by, run over, or caught between. Heavy equipment accidents can cause serious injury and death. Site workers should be aware of all heavy equipment work areas, their travel path, and swing radius. If personnel on the ground need to approach or cross the path of a heavy machine, a clear line of visual contact should be established and maintained with the equipment operator until clear of the area. If you cannot see the equipment operator, they cannot see you.

Overhead Electric Lines

Heavy equipment must not operate closer than thirty (30) feet to any overhead lines, measured directly between any part of the equipment and the lines themselves except where electrical distribution and transmission lines have been de-energized and visibly grounded at the point of work, or where insulating barriers have been erected to prevent physical contact with the lines. If drilling or excavating is required within thirty (30) feet of any overhead lines, a written work plan must be provided by the contractor or other equipment operator that includes special measures designed to mitigate the risks and is in accordance with 29 CFR 1926.550(a)(15).

Slips, Trips, and Falls

There may be slip or trip hazards associated with uneven, slippery, or elevated work surfaces. Personnel should minimize distractions and stay alert when traversing unfamiliar terrain. Appropriate footwear should be worn for the conditions, such as traction devices for icy surfaces. Avoid carrying bulky or awkward items that alter your balance or obstruct your vision. Use three points of contact when using stairs or ladders.

Excavations

All excavations will be maintained to prevent access by unauthorized persons and will be filled or fenced off by the end of the workday. Absolutely no one will be permitted in the excavations, except the operator of equipment where the operator is always located above ground level. If equipment breaks down within the excavation, the equipment will have to be towed out of the excavation for repair. All subsurface samples will be obtained by operation of the excavating equipment and will be collected from the excavator bucket.

4.5 Heavy Machinery Operations

Typically encountered heavy machinery includes tracked equipment (e.g., excavator, dozer, drill rig, geoprobe). Working near and around heavy machinery poses potential hazards, including being struck by or pinched/caught between equipment, potentially resulting in serious physical bodily harm or death.

The following precautions will be used to reduce the potential for injuries and accidents:

- The inspection of excavator and drill rig brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices will be conducted prior to the initial mobilization and checked routinely throughout the project.
- Excavator and drill rig cabs will be kept free of all non-essential items and all loose items will be secured.
- Excavators and drill rigs will be provided with necessary safety equipment, including seat belts.

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- Drill rig cables and auger flight connections will be checked for evidence of wear. Frayed or broken cables or defective connections will be replaced immediately.
- Parking brakes will be set before shutting off any heavy equipment or vehicle.
- All employees will be briefed on the potential hazards prior to the start of each excavation or drilling project.

4.6 Adverse Weather

Outdoor work can be affected by adverse weather, including electrical storms, extreme heat or cold, or extreme weather events (e.g., tornado, hurricane, blizzard). Prior to initiating field work, the field team will review the weather forecast for the duration of planned field work. The daily weather forecast will be reviewed during the daily tailgate meeting. If the forecast includes potentially adverse weather, an action plan will be reviewed, and the weather will be monitored throughout the day.

If lightning is encountered, all field activity must terminate, and personnel should seek shelter indoors or in a vehicle. Work can resume 30 minutes after the last lightning strike. Extreme heat and cold, ice and heavy rain can produce unsafe conditions. Such conditions, when present, will be evaluated on a case-by-case basis to determine if work shall terminate.

4.7 Fire and Explosion

Use of gasoline or diesel powered equipment increases the risk of fire and explosion hazards. Contractors will be required to store diesel fuel and gasoline in metal cans with self-closing lids and flash arrestors.

4.8 Requirement to Conduct Utility Mark Out

Prior to the start of any subsurface work, underground utilities and piping that may pose a potential hazard will be identified and located. “DigSafely.NewYork” or equivalent service will be called to locate and mark underground utilities. It is the responsibility of the entity performing the intrusive work to place a utility locate request. Generally, the utility locate is the responsibility of a general contractor or subcontractor. STERLING must place a locate request for intrusive sampling activities, such as with hand augurs. Note that state utility marking services generally only mark public utilities; private utilities must be located with a private locating service. Prior to field mobilization, site plans and other documents should be reviewed for documentation of subsurface utilities.

In the field, the field team should confirm with the responsible contractor that a utility locate request has been made and that utilities have been marked. Look around the work area for visual evidence that the locate request has been filled (e.g., utility flags and paint). If there is any question that utilities have not been marked, stop work and review with the contractor and Project Manager.

During intrusive work, ensure that markings are maintained and proper offsets are observed. Intrusive work should never occur within the Tolerance Zone without notifying the utility owner for specific requirements. The Tolerance Zone is generally defined as one half of the utility diameter plus 24 inches on both sides of the marked centerline.

In the event a utility is struck, work will stop and the Emergency Action Plan will be implemented.

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4.9 Confined Space Entry

Confined space entry by STERLING personnel is not authorized by this HASP. If a project requires confined space entry, a specific HASP will be implemented.

"Confined Space" is defined as a space that:

1. *"is large enough and so configured that an employee can bodily enter and perform assigned work;*
2. *has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and*
3. *is not designed for continuous employee occupancy."*

4.10 Site Work Zones

One of the basic elements of an effective HASP is the delineation of work zones for each ground intrusive location. The purpose of establishing work zones is to:

- Reduce the accidental spread of hazardous substances by workers or equipment from the contaminated areas to the clean areas;
- Confine work activities to the appropriate areas, thereby minimizing the likelihood of accidental exposures;
- Facilitate the location and evacuation of personnel in case of an emergency; and
- Prevent unauthorized personnel from entering controlled areas.

Although a work site may be divided into as many zones as necessary to ensure minimal employee exposure to hazardous substances, this HASP uses the three (3) most frequently identified zones: the Exclusion Zone, Decontamination Zone, and Support Zone. Movement of personnel and equipment between these zones should be minimized and restricted to specific access control points to minimize the spreading of contamination.

Exclusion Zone

The Exclusion Zone is the area where contamination is known or suspected to exist, and where active work will occur. The size of the Exclusion Zone depends on the scope of work and will be delineated prior to beginning site work. For site investigations, the exclusion zone will typically be the immediate excavation, test pit, borehole, etc. that is actively being implemented. For larger scopes of work (e.g., remedial actions) the exclusion zone may cover a large area.

Depending on the level of control needed, the Exclusion Zone may be physically demarcated, such as with hazard tape or temporary fencing. The minimum exclusion zone for protection of the public or nonessential personnel is 25 ft upwind and 50 ft downwind of intrusive activities.

Workers conducting activities and sampling in the Exclusion Zone will wear PPE identified in Section 1.0 – Site-Specific Supplement.

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Decontamination Zone

The Decontamination Zone is located at entry/exit points to the Exclusion Zone and is where workers leaving the Exclusion Zone can properly decontaminate themselves and equipment. Depending on the scope of work and site layout, the Decontamination Zone may be a fixed location or a general process. For site investigations, a Decontamination Zone will be established at the upwind perimeter of the Exclusion Zone, and will move as the exclusion zone moves with the investigative work. For larger scopes of work, the Decontamination Zone will be a semi-permanent location. The Decontamination Zone will include necessary personnel, equipment, and supplies. The size and configuration of the Decontamination Zone will be selected by the Project Manager. Personnel and equipment in the Exclusion Zone must pass through this zone before leaving or entering the Support Zone.

Support Zone

The Support Zone includes all areas located beyond the Exclusion and Decontamination Zones. Break areas, operational direction and support facilities will be located in this area. Eating and drinking will be allowed only in the Support Zone.

4.11 Natural Hazards

Work that takes place in the natural environment may be affected by plants and animals that are known to be hazardous to humans. Spiders, bees, wasps, hornets, ticks, poison oak, and poison ivy are only some of the hazards that may be encountered. Individuals who may potentially be exposed to these hazards should be made aware of their existence and instructed in their identification. Emergencies resulting from contact with a natural hazard should be handled through the normal medical emergency channels. Individuals who are sensitive or allergic to these types of natural hazards should indicate their susceptibility to the Project Manager.

4.12 Heat and Cold Stress Hazards

If work is to be conducted during the winter, cold stress is a concern to the health and safety of personnel. Because disposable clothing such as Tyvek does not “breathe”, perspiration does not evaporate and the suits can become wet. Wet clothes combined with cold temperatures can lead to hypothermia. If the air temperature is less than 40 degrees Fahrenheit (°F) and a worker’s clothes become wet due to perspiration, the worker must change to dry clothes.

4.13 Signs and Symptoms of Cold Stress

- **Incipient frostbite**: is a mild form of cold stress characterized by sudden blanching or whitening of the skin.
- **Chilblain:** is an inflammation of the hands and feet caused by exposure to cold moisture. It is characterized by a recurrent localized itching, swelling, and painful inflammation of the fingers, toes, or ears. Such a sequence produces severe spasms, accompanied by pain.
- **Second-degree frostbite** is manifested by skin which has a white, waxy appearance and is firm to the touch. Individuals with this condition are generally not aware of its seriousness, because the underlying nerves are frozen and unable to transmit signals to warm the body. Immediate first aid and medical treatment are required.

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- **Third-degree frostbite** will appear as blue, blotchy skin. This tissue is cold, pale and solid. Immediate medical attention is required.
- **Hypothermia** develops when body temperature falls below a critical level. In extreme cases, cardiac failure and death may occur. Immediate medical attention is warranted when the following symptoms are observed:
    - Involuntary shivering;
    - Irrational behavior;
    - Slurred speech;
    - Sluggishness; and
    - Loss of consciousness.

4.14 Preventing Cold Related Illness/Injury

- Train personnel to identify the signs and symptoms of cold stress. Require field personnel to wear proper clothing for cold, wet, and windy conditions, including layers that can be adjusted to changing weather conditions. It is important to keep hands and feet dry.
- Field personnel working in extremely cold conditions must take frequent short breaks in warm, dry shelters to allow their body temperature to increase. If possible, field work should be scheduled during the warmest part of the day. The buddy system should be used so that personnel can assist each other in recognizing signs of cold stress. The Wind Chill Chart below indicates the wind chill for combinations of wind speed and ambient air temperature. The chart also shows estimated exposure durations for frostbite to occur on exposed skin.
- Drink warm, sweet beverages, and avoid drinks with caffeine and alcohol. Eat warm, high-calorie foods.
- Personnel with medical conditions such as diabetes, hypertension, or cardiovascular disease, or who take certain medications, may be at increased risk for cold stress.

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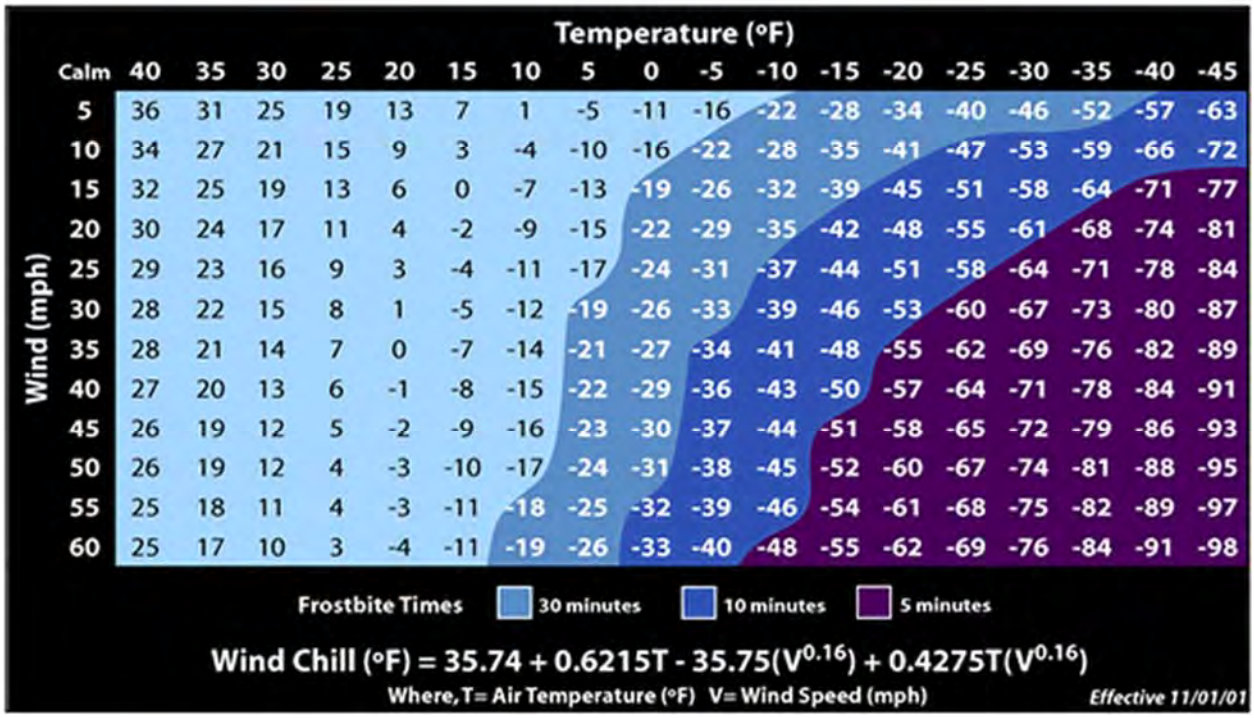

4.15 Treatment of Cold Related Injuries

If cold stress symptoms are evident, the affected person must move into a warm, dry sheltered area and all wet clothing should be removed and replaced with dry clothing. If frostbite is suspected, the affected person should be treated by trained medical personnel.

4.16 Signs and Symptoms of Heat Stress

Wearing PPE also puts a worker at a considerable risk for developing heat stress. This can result in health effects ranging from heat fatigue to serious illness or death. Consequently, regular monitoring, remaining hydrated, and other precautions are vital.

- **Heat Rash** may result from continuous exposure to heat and humid air.
- **Heat Cramps** are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include:
    - Muscle spasms; and
    - Pain in the hands, feet and abdomen.
- **Heat Exhaustion** occurs from increased stress on various body organs, including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include:
    - Pale, cool, and moist skin;

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- Heavy sweating; and
- Dizziness, fainting, and nausea.

- **Heat Stroke** is the most serious form of heat stress. Temperature regulation fails, and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Competent medical help must be obtained. Signs and symptoms are:

    - Red, hot, and unusually dry skin;
    - Lack of or reduced perspiration;
    - Dizziness and confusion;
    - Strong, rapid pulse; and
    - Loss of consciousness.

4.17 Preventing Heat Related Illness/Injury

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat stroke or heat exhaustion that person may be predisposed to additional heat injuries. To avoid heat stress, the following steps should be taken:

- Have workers drink sixteen (16) oz. (0.5 liter) of fluid (preferably water or diluted drinks) before beginning work. Urge workers to drink a cup or two every fifteen (15) to twenty (20) minutes, or at each monitoring break. A total of 1 to 1.6 gallons (four (4) to six (6) liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
- If possible, adjust work schedules to avoid the hottest parts of the day.
- Encourage workers to maintain an optimal level of physical fitness.
- Shelter (air-conditioned, if possible) or shaded areas should be provided to protect personnel during rest periods.
- Train workers to recognize, identify, and treat heat stress.

For workers wearing standard work clothes, recommendations for monitoring and work/rest schedules are those approved by American Conference of Governmental Industrial Hygienists (ACGIH) and National Institute of Occupational Safety and Health (NIOSH). Workers wearing semi-permeable PPE or impermeable PPE should be monitored when the temperature in the work area is above 70°F.

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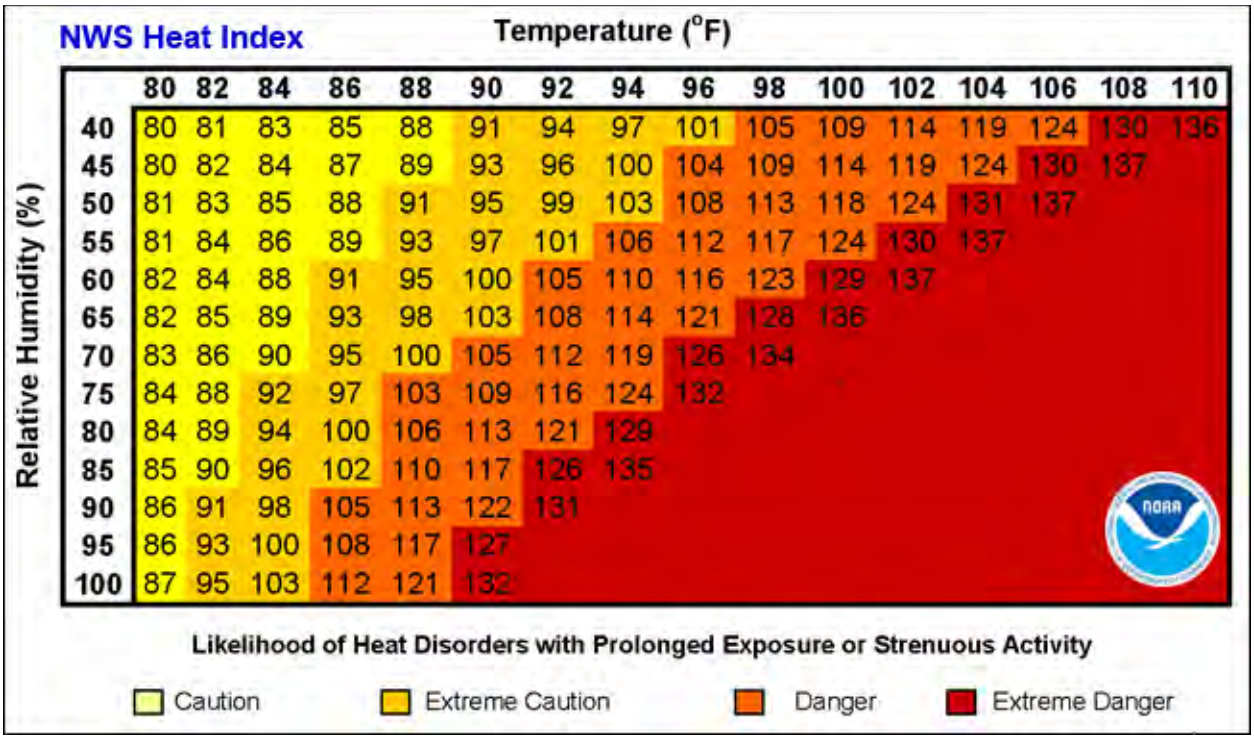

4.18 Noise Hazards

Work that involves the use of heavy equipment can expose workers to noise during field activities that can result in noise-induced hearing loss. Field personnel will have access to appropriate hearing protection such as ear muffs or disposable foam earplugs. The NIOSH recommended exposure limit for sound level exposure is 85 decibels (8-hour time weighted average). A general rule of thumb is to wear hearing protection whenever you need to raise your voice due to surrounding noise to be heard by someone standing next to you. The chart below shows general noise levels.

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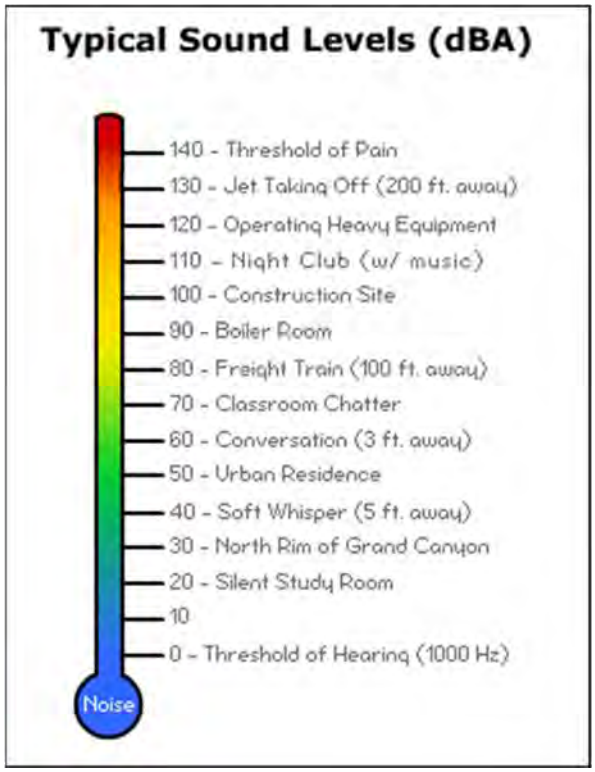

Source: https://www.osha.gov/SLTC/noisehearingconservation/

4.19 Slip, Trip, and Fall Hazards

Project sites often contain slip, trip, and fall hazards for workers, such as:

- Holes, pits, or ditches
- Excavation faces
- Slippery surfaces
- Steep grades
- Uneven grades
- Snow and ice
- Sharp objects

All workers must be instructed to keep back three (3) feet from the top edge of excavation faces.

Workers will be instructed to look for potential safety hazards and immediately inform the Project Manager regarding any new hazards. If the hazard cannot be immediately removed, actions must be taken to warn workers about the hazard.

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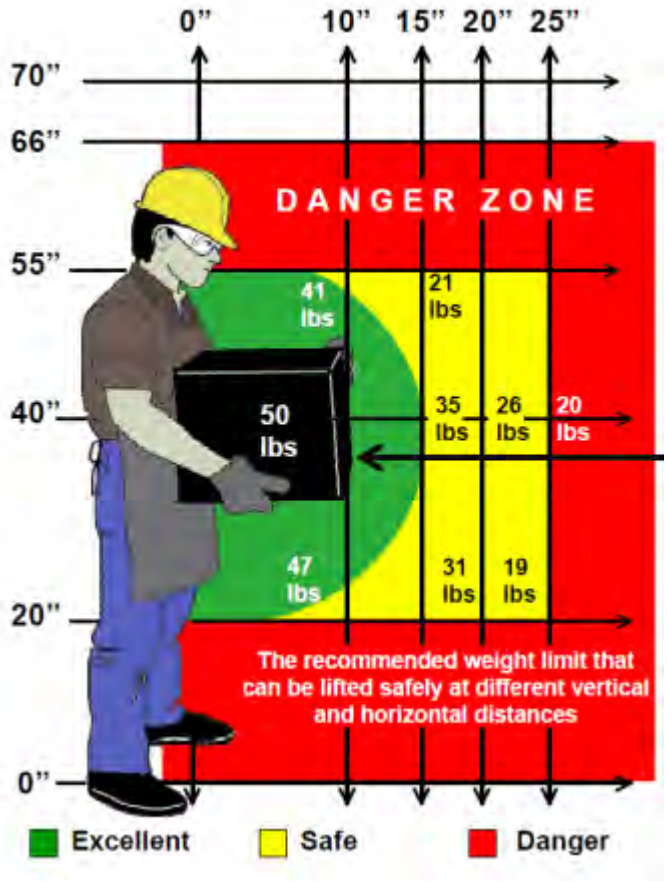
4.20 Lifting Heavy Objects

Personnel often carry equipment and supplies to and around the work site. Proper planning, lifting technique, and use of assisting equipment are essential for injury prevention. Prior to initiating field activities, know the items to be used, their size and weight, and how far they need to be moved. The use of a vehicle, cart, or sled is preferred over carrying by hand.

If items must be lifted, workers should warm up muscles and stretch before lifting objects. Make sure the travel path is clear of obstructions and tripping hazards. Use proper lifting technique by keeping a wide stance, keeping your back straight, grasping the item firmly, keeping the item close to your body, and pushing with your legs to lift up. Never lift more than 50 pounds without assistance. The figure below shows recommended safe weight limits for lifting. Note that the recommended weight decreases as the load is moved away from the body. Regardless of any weight recommendation, know when to ask for help since each person has a different ability.



Source: Ergonomics Plus: Proper Lifting Techniques (www.ergo-plus.com)

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5.0 DECONTAMINATION METHODS

5.1 Contamination Prevention Methods

The Project Manager will make all workers aware of the potential for contamination. The following procedures will be established to minimize contact with contaminants:

- Workers will not walk through areas obvious of contamination;
- Workers will not directly touch potentially hazardous substances;
- Workers will wear gloves when touching known or suspected contaminated media;
- Workers will wear disposable outer garments where appropriate; and
- Excavated soils will be placed on plastic sheeting and covered with plastic sheeting at the end of the workday.

5.2 Decontamination Methods

All workers, clothing, and equipment leaving designated contaminated areas must be decontaminated.

6.0 MEDICAL SURVEILLANCE PROGRAM

6.1 General

Workers who participate in field activities that meet the following criteria will be included in the Medical Surveillance Program:

- All who may be exposed to hazardous substances or health hazards at or above permissible exposure limits, without regard to the use of respirators, for thirty (30) days or more per year, as required by 1926.65(f)(2)(i-iv).
- All who wear a respirator for thirty (30) days or more every year as required by 1926.62(f)(2)(i-iv).
- All who are injured because of overexposure from an incident involving hazardous substances or health hazards.

6.2 Frequency of Medical Exams

Medical examinations and consultations will be provided on the following schedule to the workers who meet the above listed general qualifications:

- Prior to assignment to a work site, if any of the criteria noted above are anticipated.
- At least once every twelve (12) months, unless the physician believes a longer interval (not greater than two (2) years) is appropriate.
- As soon as possible upon notification that a worker has developed signs or symptoms indicating possible overexposure to hazardous materials.

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7.0 EMERGENCY ACTION PLAN

Workers will use the following standard emergency procedures. The Project Manager will be notified of any emergency and be responsible for ensuring that the appropriate procedures are followed. Questions regarding procedures and practices described in the HASP should be directed to the Project Manager.

7.1 Notification

Any symptoms of adverse health, regardless of the suspected cause, are to be immediately reported to the Project Manager.

Upon the occurrence of an emergency, including an unplanned chemical release, fire, or explosion, workers will be alerted and the area evacuated immediately. The Field Team Leader will notify emergency services via 9-1-1, if required. Non-Emergency contact telephone numbers are provided for local emergency services in Section 1.0 – Site-Specific Supplement. Re-entry to the work area will be limited to those required to assist injured workers or for firefighting or spill control. Anyone entering the work area following an emergency incident must wear appropriate protective equipment.

7.2 Emergency Services

A map showing the preferred route to the nearest emergency room hospital with written directions is presented in Section 1.0 – Site-Specific Supplement. In an actual emergency, dial 9-1-1 and wait for emergency responders, if possible.

The following alarm systems will be utilized to alert workers to evacuate the restricted area:

- Direct Verbal Communication
- Radio Communication or Equivalent
- Portable or Fixed Telephone

The following standard hand signals will also be used as necessary:

Hand Signal	Message
Hand gripping throat	Cannot breathe/out of air
Grip co-worker's wrist	Leave area immediately, no debate!
Hands on top of head	Need assistance
Thumbs up	Yes/O.K.
Thumbs down	No/Problem

Upon activation of an alarm, workers will proceed to a designated assembly area. The designated assembly area will be determined at the onset of field activities and updated as necessary depending upon work conditions, weather, air monitoring, etc. The location of the designated assembly area will be clearly marked and communicated to employees daily or upon relocation of the area. Workers gathered in the designated assembly area will remain there until their presence has been noted. A tally of workers on the daily restricted area access roster will be made as necessary to ensure all workers have been properly evacuated and accounted for.

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Workers may return to the designated work area following authorization by the Project Manager.

7.3 Personal Injury

If anyone within a work area is injured and cannot leave the restricted area without assistance, emergency medical services will be notified and appropriate first aid will be administered by certified Emergency Medical Technicians (EMT).

7.4 Fire/Explosion

Upon the occurrence of a fire beyond the incipient stage or an explosion anywhere on the worksite, the fire department will be alerted and all personnel moved to a safe distance from the involved area.

7.5 Equipment Failure

If any equipment fails to operate properly, the Project Manager will determine the effect of this failure on continuing operations. If the failure affects the safety of workers (e.g., failure of monitoring equipment) or prevents completion of the planned tasks, all workers will leave the work area until appropriate corrective actions have been taken.

7.6 Reporting and Record Keeping

Personnel must notify the Project Manager of the following incidents by the end of the work day the incident occurs, and provide a written account within 24 hours:

- **Near Miss**: This is an unplanned event that did not result in injury, or damage, but had the potential to do so. Near misses are opportunities to learn and improve tasks and safety measures.
- **Accident**: This is an unplanned event that causes personal injury or property damage.

The Field Team Leader must notify the Project Manager as soon as possible by phone and provide a written account via email describing the incident, who was involved, and how the incident could have been prevented. The Project Manager will maintain records of reports concerning occupational injuries and illnesses in accordance with 29 CFR 1904.

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DAILY SAFETY MEETING LOGS

DAILY SAFETY MEETING LOG
STERLING ENVIRONMENTAL ENGINEERING, P.C.
24 WADE ROAD
LATHAM, NEW YORK 12110

Project: _____ **Project No:** _____

Meeting Conducted By: _____ **Date/Time:** _____

Work to be Performed:
Health and Safety Concerns:

Potential Hazards and Protections (Check those that apply):

Excessive Noise	☐	Heavy Equipment	☐	Wet/Slippery Surface	☐
Overhead Objects	☐	Explosive Gas/Fire	☐	Water Bodies	☐
O.H. Electrical	☐	Biological Hazards	☐	Telephone/Radio	☐
Chemical Exposure	☐	Scaffolding/Ladders	☐	Decontamination	☐
Heat/Cold Stress	☐	Confined Spaces	☐	Lock Out/Tag Out	☐
Slip/Trip	☐	Dust/Particulates	☐	First Aid Kit	☐
Excavation/Shoring	☐	Vapors/Fumes	☐	Emergency Routes	☐
Electrical Shock	☐	Slopes/Uneven Terrain	☐	Fire Extinguisher	☐
U.G. Utilities	☐	Pinch Points	☐	Eye Protection	☐
Pressure Hoses	☐	Hand Tool Use	☐	Respirator	☐
Vehicle Traffic	☐	Silica Products	☐	Other:	☐

Name	**Signature**	**Company**

APPENDIX E

QUALITY ASSURANCE PROJECT PLAN (QAPP)

Sterling Environmental Engineering, P.C.

QUALITY ASSURANCE PROJECT PLAN

FORMER OAK MATERIALS FLUORGLAS DIVISION SUPERFUND SITE HOOSICK FALLS, NEW YORK

Prepared for:

Village of Hoosick Falls
24 Main Street
Hoosick Falls, New York 12090

Prepared by:

Sterling Environmental Engineering, P.C.
24 Wade Road
Latham, New York 12110

May 17, 2019

"Serving our clients and the environment since 1993"

FORMER OAK MATERIALS FLUORGLAS DIVISION
SUPERFUND SITE
HOOSICK FALLS, NEW YORK

QUALITY ASSURANCE PROJECT PLAN (QAPP)

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QUALITY ASSURANCE PROJECT PLAN (QAPP)

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) is for the sanitary sewer improvement project adjacent to the Inactive Hazardous Waste Site ID 442049 known as the former Oak Materials Fluorglas Division Superfund Site (the "Site") located at John Street/3 Lyman Street and River Road. Investigations at the Site have identified contamination of the groundwater and soils with chlorinated solvents and Per/Polyfluoroalkyl Substances (PFAS). Specifically, the identified contaminants of concern (COC) are: trichloroethene (TCE); 1,1,1-trichloroethane (TCA); and perfluorooctanoic acid (PFOA). This QAPP is designed to ensure that the processes and procedures necessary to ensure high quality, valid data are obtained that meet the project purpose and objectives.

1.1 Purpose and Objectives

Analytical sampling of soil and groundwater is required to ensure that potentially contaminated media is properly managed. Soil will be sampled and analyzed to determine potential for reuse onsite and to characterize material for disposal. Groundwater managed through dewatering and treatment activities will be sampled and analyzed to ensure compliance with discharge requirements.

1.2 Key Project Personnel

Key project personnel are listed in Table 1.

Table 1 - Key Project Personnel

Project Personnel	Title	Organization	E-mail / Telephone
Barbara Firebaugh	Project Manager	NYSDEC Central Office	Barbara.Firebaugh@dec.ny.gov (518) 402-9662
Candace Fox	Project Manager	Alpha Analytical Laboratory	cfox@alphalab.com / (508) 898-9220
Mark P. Millspaugh, P.E.	Project Manager	Sterling Environmental Engineering, P.C.	mark.millspaugh @sterlingenvironmental.com (518) 456-4900
Andrew M. Millspaugh, P.E.	Quality Assurance Officer	Sterling Environmental Engineering, P.C.	andrew.millspaugh @sterlingenvironmental.com / (518) 456-4900
Amanda Castignetti	Field Team Leader	Sterling Environmental Engineering, P.C.	Amanda.Castignetti @sterlingenvironmental.com (518) 456-4900

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2.0 SOIL AND GROUNDWATER SAMPLING

Soil and Groundwater grab samples will be collected for laboratory analysis of the following parameters:

- Volatile Organic Compounds (VOC).
- Per/Polyfluoroalkyl Substances (PFAS) consisting of 21 compounds:
    - Perfluorobutanoic Acid (PFBA)
    - Perfluoropentanoic Acid (PFPeA)
    - Perfluorobutanesulfonic Acid (PFBS)
    - Perfluorohexanoic Acid (PFHxA)
    - Perfluoroheptanoic Acid (PFHpA)
    - Perfluorohexanesulfonic Acid (PFHxS)
    - Perfluorooctanoic Acid (PFOA)
    - 1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)
    - Perfluoroheptanesulfonic Acid (PFHpS)
    - Perfluorononanoic Acid (PFNA)
    - Perfluorooctanesulfonic Acid (PFOS)
    - Perfluorodecanoic Acid (PFDA)
    - 1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)
    - N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)
    - Perfluoroundecanoic Acid (PFUnA)
    - Perfluorodecanesulfonic Acid (PFDS)
    - Perfluorooctanesulfonamide (FOSA)
    - N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)
    - Perfluorododecanoic Acid (PFDoA)
    - Perfluorotridecanoic Acid (PFTrDA)
    - Perfluorotetradecanoic Acid (PFTA)

Soil sampling will be performed directly from an excavator bucket or stockpile in general accordance with USEPA Soil Sampling Operating Procedure No: SESDPROC-300-R3. Groundwater sampling will be performed from storage tanks or from treatment system sample ports in general accordance with USEPA Wastewater Sampling Operating Procedure No: SESDPROC-306-R4. Reporting limits for aqueous samples will be below the water quality standards established by the New York State Division of Water - Technical Operation and Guidance Series (TOGS 1.1.1). Reporting limits for soil samples will be below 6 NYCRR Part 375 Protection of Groundwater concentrations. Reporting limits for PFAS will be 2 ng/L for aqueous samples and 1 ppb for soil samples.

Sampling for PFAS compounds requires special consideration for use of field equipment, clothing, and supplies that may contain PFAS compounds resulting in unrepresentative samples. The Field Team must comply with the following table of prohibited and acceptable items:

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Prohibited	Acceptable
Field Equipment	
Teflon® containing materials	High-density polyethylene (HDPE) materials
Low density polyethylene (LDPE) materials	Acetate Liners
	Silicon Tubing
Waterproof field books	Loose paper (non-waterproof)
Plastic clipboards, binders, or spiral hard cover notebooks	Aluminum field clipboards or with Masonite
Chemical (blue) ice packs	Regular ice
Field Clothing and PPE	
New cotton clothing or synthetic water resistant, waterproof, or stain-treated clothing, clothing containing Gore-Tex™	Well-laundered clothing made of natural fibers (preferable cotton)
Clothing laundered using fabric softener	No fabric softener
Boots containing Gore-Tex™	Boots made with polyurethane and PVC
Tyvek®	Cotton clothing
No cosmetics, moisturizers, hand cream, or other related products as part of personal cleaning/showering routine on the morning of sampling	**Sunscreens** - Alba Organics Natural Sunscreen, Yes To Cucumbers, Aubrey Organics, Jason Natural Sun Block, Kiss my face, Baby sunscreens that are "free" or "natural" **Insect Repellents** - Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellant, Herbal Armor, California Baby Natural Bug Spray, BabyGanics **Sunscreen and insect repellant -** Avon Skin So Soft Bug Guard Plus – SPF 30 Lotion
Sample Containers	
LDPE or glass containers	HDPE or polypropylene
Teflon-lined caps	Unlined polypropylene caps
Rain Events	
Waterproof or resistant rain gear	Gazebo tent that is only touched or moved prior to and following sampling activities
Equipment Decontamination	
Decon 90®	Alconox® and/or Liquinox®
Water from an on-site well	Potable water from municipal drinking water supply
Food Considerations	
All food and drink, with exceptions noted on right	Bottled water and hydration fluids (i.e, Gatorade® and Powerade®) to be brought and consumed only in the staging areas

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Sample reporting limits for each contaminant of concern (COC) are presented in Table 2.

Table 2 –Analytical Reporting Requirements

Analyte	Aqueous Sample Reporting Limit	Soil Sample Reporting Limit
VOC	TOGS 1.1.1	6 NYCRR Part 375 Protection of Groundwater
PFAS	2 ng/L	1 ppb

Sample media, analytical parameters, and reporting requirements are provided below in Table 3.

Table 3 –Sampling Requirements

Sample Media	Analytical Parameters	Holding Time (days)	Reporting	Laboratory
Soil	Part 375 VOCs via USEPA 8260C	14	Category A	Alpha Analytical Laboratories
Soil	NY 21 PFAS via 537(M) Isotope Dilution	28	Category A	Alpha Analytical Laboratories
Water	Part 375 VOCs via USEPA 8260C	14	Category A	Alpha Analytical Laboratories
Water	NY 21 PFAS via 537(M) Isotope Dilution	14	Category A	Alpha Analytical Laboratories

2.1 Laboratory Sample Custody Procedures

A New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) certified laboratory will be used that meets the requirements for sample custody procedures and cleaning and handling sample containers and analytical equipment. A Chain of Custody (COC) form shall include the sampler(s) name, sample collection time, sample date, analysis type, container type, number of containers, type of preservatives, and reporting requirements. The COC shall accompany the samples from field collection, to analysis at the laboratory. Each recipient shall sign and date the COC form when the samples are received. A COC form is provided by the analytical laboratory.

2.2 Data Quality Requirements and Assessments

Data quality requirements and assessments are provided in the NYSDEC ASP, which includes the detection limit for each analyte and sample matrix. Analyte detection limits will be at least as low as the comparative regulatory standard. Note that the quantification limits, estimated accuracy, accuracy protocol, estimated precision, and precision protocol are determined by the laboratory and will be in conformance with the requirements of the NYSDEC ASP (latest revision).

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2.3 Sample Identification

Each sample container will have an affixed durable label that specifies the following sample information:

- Sample location.
- Sample type.
- Sample identification number.
- Date and time of sample collection.
- Laboratory analyte.
- Preservative type (if applicable).

2.4 Sample Preservation, Handling, and Shipment

All analytical samples will be placed in appropriate laboratory-provided sample containers as specified in the NYSDEC ASP. Holding time criteria identified for individual ASP methods will be followed.

Prior to transport to the laboratory, sample containers will be checked for proper identification and compared to the field logbook for accuracy. The samples will be wrapped with a cushioning material and will be placed in a cooler with ice immediately after sample collection and maintained at 4 degrees Celsius (4°C) throughout the duration of the sampling event and subsequent transport to and storage at the analytical laboratory until analysis.

Chain of Custody Forms will be placed in a sealed plastic bag and taped to the underside of the cooler lid. The cooler will be sealed with packaging tape and custody seals will be placed in such a manner that any opening of the cooler prior to arrival at the laboratory can be detected.

All samples will be transported to ensure laboratory receipt within 48 hours of sample collection in accordance with NYSDEC requirements. The laboratory will be notified prior to the shipment of the samples, or to arrange a courier pickup. Sample containers and preservation are listed in Table 5.

Table 5 – Sample Preservation Guidelines

Container Type	Container Size	Preservative	Matrix
Glass VOA Vial	40 ml	Hydrochloric Acid (HCL)	Groundwater (VOC)
Plastic	1 L	Unpreserved	Groundwater (PFAS)
Glass VOA Vial	40 ml	Methanol	Soil (VOC)
Plastic	8 oz	Unpreserved	Soil (PFAS)

3.0 DECONTAMINATION PROCEDURES

All field sampling equipment should be sterile and dedicated to a particular sampling location. In situations where this is not possible, decontamination procedures will be used to reduce cross-contamination between sample locations. A decontamination station will be established at an area located away from the suspected source of contamination and close enough to the sampling area to keep

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equipment handling to a minimum.

All non-disposable equipment will be decontaminated prior to initial use, prior to moving to a new sampling location, and prior to leaving the site. Sampling should begin in the area of the site with the lowest known contamination and proceed to the areas of highest suspected contamination.

3.1 Decontamination Procedures for Sampling Equipment

Teflon, PVC, polyethylene, polystyrene, and stainless-steel sampling equipment decontamination procedures will be as follows:

- Wash thoroughly with non-residual, non-ionic detergent (such as Alconox) and clean potable distilled water, using a brush to remove particulate matter or surface film.
- Rinse thoroughly with distilled water and air dry.

4.0 FIELD WORK DOCUMENTATION

Proper management and documentation of field work is essential to ensure all necessary work is conducted in accordance with the QAPP. Daily field reports, correspondence, and photo documentation should be collected, and submitted to the appropriate key project personnel (Table 1).

4.1 Daily Field Report

Pertinent information regarding the site and sampling procedures must be documented. Notations should be made in a legible fashion, noting the time and date of all entries. Information recorded on task-specific field forms need not be duplicated in a log book. Information recorded in this field report should include, but not be limited to, the following:

- Project name and address.
- Name, address and telephone number of field contact.
- Site address.
- Purpose of sampling.
- Location of sampling point(s).
- Number(s) and volume(s) of sample(s) taken.
- Description of sampling point and sampling methodology.
- Date and time of collection, arrival and departure.
- Sample distribution and method of storage and transportation.
- References, such as sketches of the sampling site or photographs of sample collection.
- Field observations, including results of field analyses (e.g., pH, temperature, specific conductance), water levels, colors, odors, and sheens.
- Signature of personnel responsible for completing log entries.

4.2 Chain of Custody Forms

The Chain of Custody Form is initiated at the laboratory with bottle preparation and is shipped with the bottles. The Chain of Custody remains with the sample(s) at all times and lists the name of the person

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assuming responsibility for the samples. This person is tasked with ensuring secure and appropriate handling of the bottles and samples. The completed form should indicate that there were no lapses in sample accountability.

A sample is considered in an individual's custody if any of the following conditions are met:

- It is in the individual's physical possession,
- It is in the individual's view after being in his or her physical possession,
- It is secured by the individual so that no one can tamper with it, or
- The individual puts it in a designated and identified secure area.

At a minimum, the following information shall be provided on the Chain of Custody:

- Project name and address
- Project number
- Sample identification number
- Date
- Time
- Sample location
- Sample media
- Analysis requested
- Number and volume of containers
- Sampler(s) name(s) and signature(s)
- Spaces for relinquished by/received by signature and date/time.

The Chain of Custody Form is filled out and signed by the person performing the sampling. The original of the form travels with the sample(s) and is signed and dated each time the sample is relinquished to another party, until the samples reach the laboratory or analysis is complete. The field sampler keeps one copy and a copy is retained for the project file. Each cooler will have a Chain of Custody that corresponds with the samples for that cooler.

5.0 FIELD CHANGES AND CORRECTIVE ACTION NOTIFICATION

Whenever there is a required or recommended investigation/sampling change or correction, the STERLING Project Manager must be notified for approval (Table 1 – Key Project Personnel).

6.0 CALIBRATION PROCEDURES AND PREVENTATIVE MAINTENANCE

The following information regarding equipment will be maintained for the project:

1. Equipment calibration and operating procedures will include provisions for documentation of frequency, conditions, standards, and records reflecting the calibration procedures, methods of usage, and repair history of the monitoring unit. Calibration of field equipment will be performed in accordance with manufacturer recommendations.
2. Critical spare parts, necessary tools, and manuals will be available to facilitate equipment maintenance and repair.

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7.0 SAMPLE WASTE DISPOSAL

Surplus soil and groundwater generated from sampling activities must be contained and managed through the site construction activities. Soiled personal protective equipment (PPE) and disposable sampling equipment will be considered solid waste and contained for offsite disposal. If hazardous waste contamination of PPE or disposable equipment is suspected due to elevated measurements of screening instruments, visual observations, odors or other means, PPE and equipment will be drummed and secured onsite and an approved disposal method will be employed.

8.0 LABORATORY DATA DELIVERABLES, QUALITY ASSURANCE, AND QUALITY CONTROL

Laboratory analytical data require Category A data deliverables as defined in the NYSDEC ASP, July 2005 (or latest available version). Quality Assurance/Quality Control (QA/QC) samples will be analyzed according to the frequency in Table 6.

Table 6 – Quality Assurance / Quality Control (QA/QC) Samples

QA/QC Sample Type	Frequency
Matrix Spike (MS)	1 per 20 samples
Matrix Spike Duplicate (MSD)	1 per 20 samples
Trip Blank (TB)	1 per 20 samples (or 1 per cooler)
Field Blank (FB)	1 per 20 samples
Duplicate (DUP)	1 per 20 samples

8.1 Laboratory Trip Blanks

The laboratory supplies trip blank samples with sample containers when VOCs are analyzed. The purpose of trip blank is to detect additional sources of VOCs that might influence contaminant values reported in actual samples both quantitatively and qualitatively. The following are potential sources of contamination:

- Laboratory reagent water
- Sample containers
- Cross contamination in shipment
- Contact with analytical instrumentation during preparation of the sample containers and analysis of the samples at the laboratory

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- Laboratory reagents used in analytical procedures

A trip blank consists of a set of 40 mL sample vials filled by the laboratory with demonstrated analyte-free water. Trip blanks should be handled, transported, and analyzed in the same manner as the samples acquired that day, except the trip blank samples are not opened in the field. Trip blanks must accompany samples at a rate of one set per shipment. The temperature of the trip blanks must be maintained at 4°C while onsite and during shipment. Trip blanks must be returned to the laboratory with the same set of bottles they accompanied in the field.

8.2 Duplicates and Matrix Spike/Matrix Spike Duplicates

The selected location for collecting Duplicate and matrix spike/matrix spike duplicates may be randomly chosen. Duplicate sample results are compared to the original sample to ensure proper sampling procedures.

Matrix spike samples are quality control procedures, consistent with NYSDEC ASP specifications, used by the laboratory for internal QA/QC. The matrix spike (MS) and matrix spike duplicates (MSD) are aliquots of a designated water sample which is spiked with known quantities of specified compounds. The matrix spike/matrix spike duplicates are used to evaluate the matrix effect of the sample upon the analytical methodology and to determine the precision of the applicable analytical method.

8.3 Field Blanks

Field Blanks are collected concurrent with PFAS sampling to test for cross contamination and interference form PFAS containing materials not associated with the sample media. A container of contaminant free water is provided by the laboratory and transferred to a second contaminant free sample container in the field at the location where a PFAS sample is collected. The transferred Field Blank is then handled as an analytical sample and analyzed for PFAS compounds to determine if outside sources are impacting the samples.

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APPENDIX F

NYSDEC WASTE TRACKING FORM

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Part 360 Series Waste Tracking Document - Construction & Demolition Debris

This form may be used to satisfy the tracking document requirements of both section 361-5.6 and section 364-5.1 for the transport of C&D Debris

TYPE OF C&D DEBRIS:	☐ Limited-Use Fill ☐ Restricted-Use Fill ☐ Contaminated Fill ☐ Fill Material - Unknown ☐ General Fill ☐ Residue ☐ Construction Waste ☐ Demolition Waste ☐ Other (specify): _____
WASTE QUANTITY:	_____ Tons _____ Cubic Yards Check box to indicate quantity is estimated: ☐
LOCATION WHERE WASTE WAS PICKED UP:	Source Name: _____ Address: _____ City: _____ State: _____ Zip Code: _____

GENERATOR: Name: _____ DEC Permit/Reg. No. (if applicable): _____

Address: _____ City: _____ State: _____ Zip: _____

Authorized Representative of Generator: _____ Phone: _____

Transporter Name: _____

Receiving Facility Name: _____ ☐ Chosen by Transporter

Address: _____ City: _____ State: _____ Zip: _____

I have completed this tracking document describing the waste and identifying the transporter and receiving facility. I certify, under penalty of law, that the information provided in this waste tracking document has been prepared under my direction and supervision and further certify that the information contained herein is true and accurate. I am aware that any false statement made on this document is punishable pursuant to Section 210.45 of the Penal Law.

Signature: _____ Date: _____

TRANSPORTER: *To be completed by Transporter* DEC Permit/Registration No.: _____

Transporter Company Name: _____

Describe all Discrepancies in type or quantity of waste: _____

_____

Driver Name (print): _____ Phone: _____ Plate No.: _____

Signature: _____ Date: _____

RECEIVING FACILITY: *To be completed by Receiving site* DEC Permit/Reg. No. (if applicable): _____

Name: _____ Address: _____

City: _____ State: _____ Zip: _____ Put [X] for: ☐ interim processor, or ☐ final site

Describe all Discrepancies in type or quantity of waste: _____

_____

I certify, under penalty of law, that the information contained herein is true and accurate.
I am aware that any false statement made on this document is punishable pursuant to Section 210.45 of the Penal Law.

Print Name: _____ Phone: _____

Signature: _____ Date: _____

The completed tracking document for all waste types must be returned to the Generator <u>within two weeks</u> of receipt of the waste. Statewide for restricted-use fill, limited-use fill and contaminated fill, and for all waste types, except residue, generated in the City of New York, a copy of the completed tracking document **must also be provided to NYS DEC within 15 days** of waste delivery to the receiving facility. [ref: 6 NYCRR 364-5.1(b)(5)]

Return completed forms to NYS DEC by e-mail to transport@dec.ny.gov OR fax to 518-402-9034 OR mail to 625 Broadway, 9th Floor, Albany, NY 12233-7251.

APPENDIX G

NYSDEC DIVISION OF WATER SPDES DISCHARGE EQUIVALENCE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Bureau of Permits
625 Broadway, Albany, New York 12233-3505
P: (518) 402-8111 | F: (518) 402-9029
www.dec.ny.gov

MEMORANDUM

TO: Barbara Firebaugh
FROM: Erik W. Posner
SUBJECT: 4-42-049 (Hoosick Falls Sewer Project)
DRAINAGE BASIN: 11-02 (Hoosick River)
DATE: May 29, 2019

In response to your request, please follow the effluent limitations and monitoring requirements below for the above noted remediation discharge.

The DOW does not have any regulatory authority over a discharge from a State, PRP, or Federal Superfund Site. DER will be responsible for ensuring compliance with the attached effluent limitations and monitoring requirements, and approval of all engineering submissions. Additionally, requirement #1 identifies the appropriate DER Section Chief to send all effluent results, engineering submissions, and modification requests. The Regional Water Engineer should be kept appraised of the status of this discharge and, in accordance with the attached criteria, receive a copy of the effluent results for informational purposes.

Discharge Conditions

The attached criteria are subject to the following conditions:

1. The criteria do not contain discharge limitations for radioactive discharges. Limitations on discharges of radiation or radioactive isotopes are addressed under Part 380 Radiation Control Permits.

2. If contaminants of concern are present at a site which do not appear on the attached list, those contaminants should be analyzed for, and DOW should be consulted if any measurable concentration of an unlisted COC is to be discharged.

3. Prior to beginning work, DER will review and approve the methods plan and equipment list of the proposed water treatment and handling system(s). The approved method plan will include provisions that fully comply with the conditions in this memo. This approval will be limited in duration to the term specified in the construction contract.

4. Approval for each batch discharge from temporary storage tanks (21,000-gallon tanks, approximately) will be granted based upon review and approval of sampling results by the DER and Engineer demonstrating that the treatment and management practices have achieved compliance with the specified discharge criteria for site specific contaminants of concern. Representative samples shall be collected after approved water treatment has been completed and each treated water holding tank is full at a frequency of 1 sample per storage tank. If any sample fails to meet the discharge criteria, it shall be assumed that the entire treated water storage tank volume does not meet the discharge criteria. In such cases, the water from the treated water storage tank will require re-treatment and re-sampling as specified above, demonstrating compliance before discharge will be allowed. No sample is required prior to filling the first treated water holding tank.

5. Representative samples may be either a grab sample taken when the treated water holding tank is filled or may be a vertical composite from the filled treated water holding tank. The sampling method must be the same for all samples.
6. Discharge rate limitations and energy dissipation devices may be required to protect against erosion and fluctuations in stream flow due to discharges.

If you have any questions, please contact me at (518) 402-8259.

Attachment (Effluent Limitations and Monitoring Requirements)

ec: Derek Thorsland, Regional Water Engineer (w/attach)
Donald Canestrari, BWP Section Chief, DOW (w/attach)

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning June 3, 2019 and lasting until July 26, 2019 the discharges from the wastewater treatment facility (consisting of filtration, metering and carbon adsorption) to the Hoosick River, water index number H-264, Class C(T) shall be limited and monitored by the operator as specified below:

Outfall Number and Parameter	Discharge Limitations	Units	Minimum Monitoring Requirements	
	Daily Max		Measurement Frequency	Sample Type
Outfall 001 - Treated Dewatering Discharge:				
Flow	Monitor	GPD	See Discharge Condition #4	Recorder
pH (range)	6.0 - 9.0	SU	See Discharge Condition #4	See Discharge Condition #5
Total Suspended Solids	50	mg/l	See Discharge Condition #4	See Discharge Condition #5
Settleable Solids	0.1	ml/l	See Discharge Condition #4	See Discharge Condition #5
Total Dissolved Solids	Monitor	mg/l	See Discharge Condition #4	See Discharge Condition #5
Oil & Grease	15	mg/l	See Discharge Condition #4	See Discharge Condition #5
Dissolved Oxygen	6.0 (Min)	mg/l	See Discharge Condition #4	See Discharge Condition #5
Total Organic Carbon (TOC)	Monitor	mg/l	See Discharge Condition #4	See Discharge Condition #5
Tetrachloroethene	1.0	µg/L	See Discharge Condition #4	See Discharge Condition #5
Trichloroethene	40	µg/L	See Discharge Condition #4	See Discharge Condition #5

Outfall Number and Parameter	Discharge Limitations	Units	Minimum Monitoring Requirements	
	Action Level		Measurement Frequency	Sample Type
Outfall 001 - Treated Dewatering Discharge				
Perfluorooctanoic acid (PFOA)	See Footnote 1	ng/L	See Discharge Condition #4	See Discharge Condition #5
Perfluorooctanesulfonic acid (PFOS)	See Footnote 1	ng/L	See Discharge Condition #4	See Discharge Condition #5

1: Monitoring for PFOS and PFOA shall use EPA Method 537, Version 1.1. Action levels are equivalent to the LCMRL in Table 5 of the EPA method. If the sample results are at or above the EPA Method 537, Version 1.1 LCMRL the water from the treated water storage tank will require re-treatment and re-sampling as specified in Discharge Condition #4, demonstrating compliance before discharge will be allowed.

Additional Conditions:

1. Discharge is not authorized until such time as an engineering submission showing the method of treatment is approved by the Department. The discharge rate may not exceed the effective or design treatment system capacity. All monitoring data, engineering submissions and modification requests must be submitted to:

   Ian Beilby, P.E.
   Division of Environmental Remediation
   NYSDEC
   625 Broadway
   Albany, New York 12233-7016
   (518) 402-9676

   With a copy sent to:
   Derek Thorsland, P.E.
   Regional Water Engineer, Region 4
   1130 North Wescott Road
   Schenectady, NY 12306-2014
   (518) 357-2219

2. Only site generated wastewater is authorized for treatment and discharge.

3. Authorization to discharge is valid only for the period noted above but may be renewed if appropriate.

4. Any use of corrosion/scale inhibitors, biocidal-type compounds, or other water treatment chemicals used in the treatment process must be approved by the department prior to use.

This discharge and administration of this discharge must comply with the substantive requirements of 6NYCRR Part 750.